Infor LN User Guide for Multicompany Structures

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Contents

About this guide

This document describes the functional aspects of multisite structures in LN. For information about the technical aspects, refer to the related documents listed later in this section.

Because each organization has unique requirements, this document does not attempt to determine the preferred multisite structure for a specific situation. The definition of an organization's multisite structure must be made after a thorough investigation of business and technical requirements, as well as the LN functional and technical capabilities.

In this document, you are assumed to be familiar with the following:

- The overall structure of packages, modules, and sessions of the LN software
- The company concept and the use of database tables in LN
- The general business procedures used in everyday business practice

This document contains the following chapters:

Chapter 1, "Introduction to Multicompany Concepts," describes the main features of an LN multisite environment.

Chapter 2, " Multicompany Structures," describes the LN company types and the possible combinations of company types in a multicompany structure.

Chapter 3, "Currency Systems," describes the types of currencies that a company uses and the possibilities and limitations of the various multicurrency system types.

Chapter 4, "Enterprise Modeling," describes how you can use the Enterprise Modeling Management (EMM) module of the common data package to define the entities of your LN system and their relationships.

Chapter 5, "Business Partners," describes the various types of business partners and how LN can register separate business partner data for each sales office and purchase office, and in each financial company of a multicompany structure.

Chapter 6, "Multicompany Financials," describes the most important financial and tax reporting functions of Financials in a multicompany structure.

Chapter 7, "Multicompany Taxation," describes the most important tax registration and reporting features of Financials in a multicompany structure. For more details, refer to the User's Guide for Taxation.

Chapter 8, "Multicompany Invoicing," describes the multicompany aspects of generating invoices in Central Invoicing.

Chapters 9 through 15 describe the most important features of the various LN logistic packages in a multisite, multicompany environment.

Chapter 16, "Multicompany Data Sharing," describes the methods that you can use to share data between the companies of a multisite structure.

Chapter 17, "Multicompany Technical Issues," describes some multisite technical topics, such as electronic data interchange (internal EDI).

The glossary at the end of this document lists the definitions of the terms used in this document.

Related documents

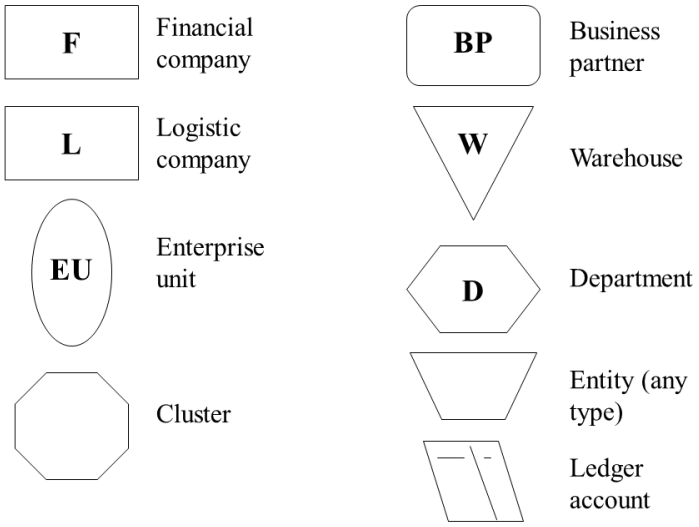
- User Guide for how to set up a company (U9503* US)
- User Guide for Multicompany Table Sharing (U9505* US)
- User Guide for Integration Mapping (U8936* US)
- User Guide for Taxation (U8966* US)
- Infor LN Exchange User Guide (U8405* US)

Acronyms used in this document

Acronym	Full term
BOM	Bill of material
DEM	Dynamic Enterprise Modeler
EDI	Electronic data interchange
ESD	Enterprise structure diagram
EIS	Enterprise information system
EMM	Enterprise Modeling Management

Notation conventions

The following figure shows the symbols that are used in the various diagrams in this document:



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Introduction

1

The term multicompany refers to processes in more than one business unit within an organizational structure.

The term processes refers to actual business events, such as material handling and manufacturing, or the recording of these business events.

The term business unit refers to any entity in an organization that has some degree of independence, for example, a warehouse, a distribution center, a manufacturing plant, a sales office, and an administrative group. Independence implies that some degree of management is unique to the entity, including the financial aspect.

A clear understanding of the organization's structure and the LN multicompany functionality is required before you can start to develop a multicompany implementation plan.

Defining a company structure includes identifying the following:

- Physical locations
- Technical architecture and data management requirements
- Management structure
- Reporting requirements
- Centralized/decentralized planning
- Centralized/decentralized procurement
- Centralized/decentralized manufacturing
- Financial administration.

Analyzing the organizational structure and processing requirements in conjunction with LN multicompany functional and technical capabilities provides a foundation for an implementation plan.

This chapter briefly describes the following main aspects of multicompany processing:

- Multicompany structures
- Multicompany terms
- Enterprise structure modeling
- Enterprise units
- Multicurrency
- Intralogistic-company functions

- Data sharing

Multisite environments

A site is a set of company processes that is independent, to a degree, of the other company processes. For example, the production plants, an assembly plant, a distribution center, and the sales offices of an organization can form separate sites. A multisite environment is the integration of a number of sites in one organization structure.

A multisite environment consists of application logic and technology that refers to more than one enterprise unit, company, organization, or LN server. A multisite environment can provide optimization at enterprise level, with planning and control that encompass the entire enterprise such as central inventory control, central purchasing, and central sales. The same master data can be used enterprise-wide. The actual operations can be decentralized and carried out anywhere in the world.

An LN multisite environment usually consists of a structure of multiple logistic and financial companies. Therefore, multisite is often synonymous with multicompany. If the various sites are located in separate countries, you must set up a multicurrency system for the companies of the multicompany structure.

Multicompany terms

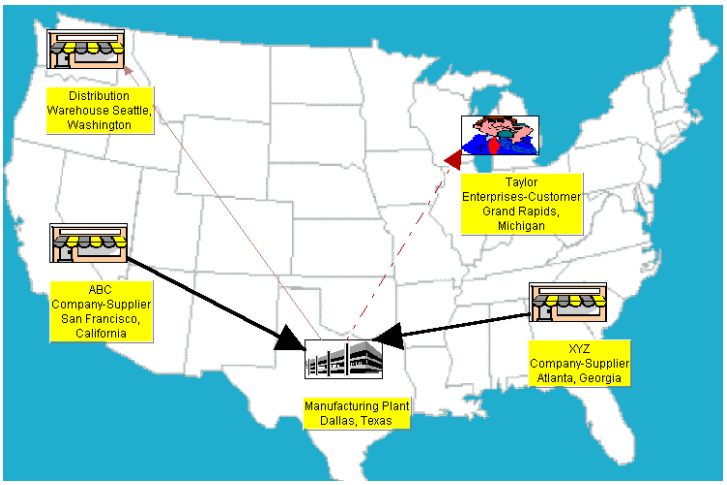
This section introduces some of the terms used in this document.

Company	An LN company is a set of tables where master data and dynamic data (logistical and/or financial) are stored.
Data Replication	Data is copied from one company into another company.
Financial Company	A financial company is a company with a least one financial table. The main function of a financial company is to register all accounting transactions that result from the activities performed in the enterprise units that are linked to the financial company. These activities consist of the operational and logistical transactions that result from a logistic goods flow and from production, service, warehousing, and support activities.
Multicompany (multisite)	An organization in which the LN configuration consists of more than one LN company. The integration of a group of company processes into a structure, which is referred to as multicompany in this document.
Table	A table is the basic unit of data storage. For example, LN has an item table, country table, warehouse table, and so on.
Table Linking	For two or more companies to use the same data, the companies must access the same table in real-time processing. All companies have the same permissions to insert, delete, or change table records. The linked table is physically located in one company.

Dynamic Enterprise Modeler	A tool that supports the process of creating a template or framework to adapt an organization's software, in real time, across changing organizational structures, business practices, and operational procedures and.
Enterprise Modeling Management (EMM)	The EMM module contains all enterprise modeling-related data for companies, enterprise units, clusters, key entities, and relationships between entities and enterprise units. Currency information is also an important element of EMM.
Enterprise Structure Diagram	A model that graphically represents the structure of a company, which assists in the determination of the overall LN company structures.
Enterprise Unit	A collection of logically grouped entities linked to the same financial company and to the same logistic company. Enterprise units are considered independent financial units within a logistical context.
Entity	A separate and independent business unit. Examples include: assembly plants, manufacturing plants, distribution centers, sales offices, and purchase offices. You can use enterprise units to link entities to the appropriate financial company.

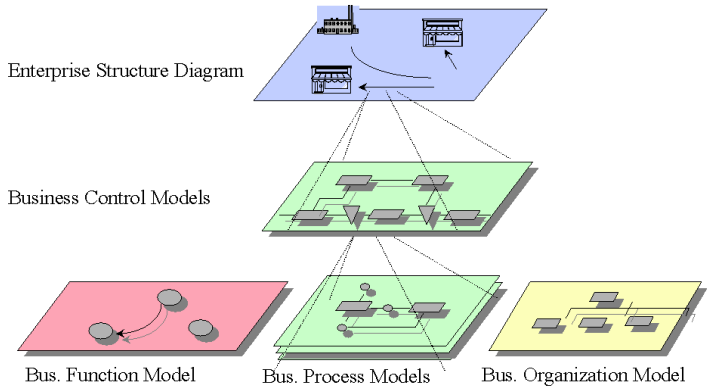
Enterprise structure modeling

The LN software supports complex company structures. For example, the production sites can be in Asia, America, or in the sales offices in various European countries. In the enterprise structure diagram, the various sites of your enterprise are represented by enterprise units. You also indicate the relationships between the enterprise units in the enterprise structure diagram, as shown in the following figure.



You can use the Dynamic Enterprise Modeler (DEM) to model the structure of your enterprise. In this way, you can model your enterprise independent of the organization of the LN databases. Alternatively, you can set the enterprise structure up directly in LN in the Enterprise Modeling Management module.

Note: The design of a multicompany structure must take the organization of the databases and their distribution over the various servers into account.



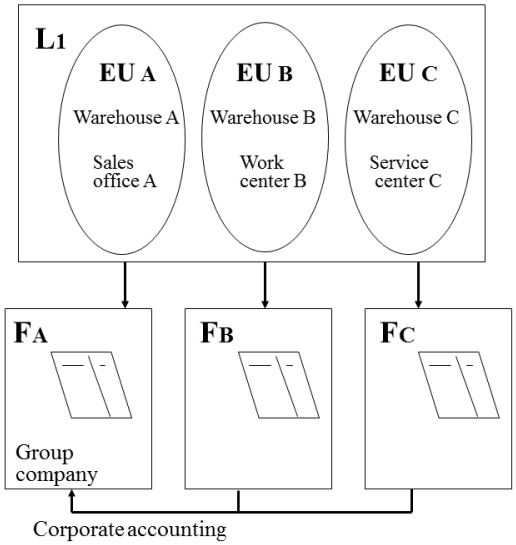
To summarize:

- You use enterprise units to model the multicompany structure.
- You use logistic and financial companies to organize the database and the users' authorizations to work with parts of the database.

Enterprise units

An enterprise unit is a financially independent part of the organization. An enterprise unit consists of entities such as departments, work centers, warehouses, and projects within one logistic company. An enterprise unit can represent a manufacturing plant, an assembly plant, a sales organization, and so on.

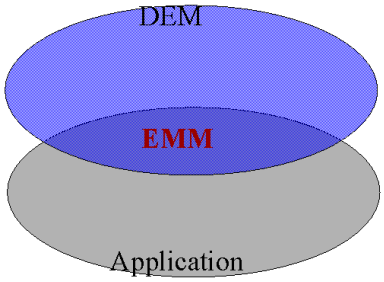
In the multicompany structure, an enterprise unit identifies a financial unit or a fiscal unit. All the transactions related to an enterprise unit are posted to one financial company. You can link the enterprise units of one logistic company to various financial companies for separate financial accounting, and perform the corporate accounting in the financial company that acts as the group company, as shown in the following figure:



If separate sites of your organization together form one legal and fiscal unit, you can link the enterprise units of one or more logistic companies to one financial company.

You can use the enterprise units for the modeling and configuration of a multicompany structure. Therefore, you do not need to create separate companies for the different business units and different locations of your enterprise, which was the usual solution in earlier versions of the LN software.

Use the Enterprise Modeling management module to map the various entities such as companies, departments, warehouses, to the enterprise structure. In addition you can define main characteristics such as the company's currency system and various types of goods relationships between departments and warehouses.



EMM provides the integration between the back-end ERP applications and the front-end Dynamic Enterprise Modeler.

Multicurrency

In LN, a logistic company can operate in multiple countries. The LN multicurrency systems enable a company to conduct accounting in more than one currency. Amounts can be calculated and registered in up to three currencies. Refer to "Multicurrency Systems" on page 37 for details.

Intralogistic-company transactions

Sales offices, purchase offices, work centers, service centers, and warehouses are entities of logistic companies. The entities are grouped into enterprise units.

You can define the enterprise units in one logistic company as each other's customers and suppliers and model the goods flow and the corresponding financial relations, such as invoicing and pricing agreements between them. To accomplish this, you must define internal business partners and link the business partners to the enterprise units. A one-to-one relationship must exist between internal business partners and enterprise units.

Data sharing

The companies of a multicompany structure must use consistent data. For example, you can use the same calendars, item codes, business partners, and pricing information in the various sites.

Some data must be shared, other data can be shared if required, and still other data must not be shared at all. You can use several data sharing and replication techniques to make the same data available to companies. Refer to "Multicompany Data Sharing" on page 167 for details.

Multicompany processing

The multicompany structure enables enterprise-wide production planning and operations management. The sections below describe the multicompany functions that the various LN packages support.

Multicompany Financials

In one logistic company, you can process logistic transactions between departments, work centers, and warehouses of enterprise units that are linked to different financial companies. If the debit and the credit sides of a logistic transaction are posted to different financial companies, LN can automatically create intercompany transactions between the companies.

You can aggregate the data of a group of financial companies to the financial group company for corporate accounting.

Tax registration and declaration is always restricted to a single country and therefore, to a single financial company. In a single logistic, multifinancial multicompany structure, the taxable transactions originate form a single company and the tax registration must take place in multiple financial companies.

For more information about corporate accounting, intercompany transactions, and multicompany tax issues, refer to "Multicompany Financials" on page 73.

Multicompany taxation

For details about multicompany tax registration and reporting, VAT processing for intra-EU transactions, and registering in countries in which your organization does not have a legal presence, refer to "Multicompany Taxation" on page 95.

Multicompany invoicing

For details about invoicing based on various types of internal trade between the departments, warehouses, and service departments in a multicompany structure, refer to "Multicompany Invoicing" on page 103.

Multicompany Enterprise Planning

You can use central multicompany planning to define a central plan that coordinates and triggers the local plans in the production companies. You can also aggregate and disaggregate the plans to different levels. Refer to "Multicompany Enterprise Planning" on page 115 for more information.

Multicompany Manufacturing

Product definition, engineering data management, production scheduling, and execution is controlled in each logistic company. Enterprise units do not have an effect on the activities that do not have financial consequences.

In a logistic company, routings can include work centers in different countries that belong to different enterprise units. LN posts the WIP transfers to the financial companies of the enterprise units.

Refer to "Multicompany Manufacturing" on page 127 for more information.

Multicompany Order Management

During sales order entry, to see the available inventory in warehouses of your own and other logistic companies, you can use the bill of enterprise or use Enterprise Planning and Order Promising. If the sales office and the warehouse are linked to separate financial companies, LN can generate intercompany settlements between the financial companies.

LN registers some financial business partner data separately for each sales office and for each purchase office. In this way, the various enterprise units can conduct business with the same customers and suppliers.

In a multicompany structure, you can manage all or part of the purchase orders centrally. For example, you can create a central purchase contract with your suppliers, including price and discount agreements that apply to all the sites of your organization.

Refer to "Multicompany Order Management" on page 137 for more information.

Multicompany Project

You must link a project to an enterprise unit and, in this way, to a financial company. If you use multiple financial companies, you can perform separate financial accounting for the projects of one logistic company.

You can aggregate the data of several subprojects to a main project for integrated project monitoring.

You can specify a project currency for each project and subproject. In this way, you can manage a project in any currency that is convenient, for example, the local currency of the country where you carry out the work.

Refer to "Multicompany Project" on page 145 for more information.

Multicompany Service

Service departments and warehouses that contain spare parts and components used for service and maintenance all belong to enterprise units. To perform separate financial accounting for the service departments and their warehouses, you can assign service departments and warehouses to enterprise units that are linked to different financial companies.

If goods are transferred between service departments and warehouses, LN can perform invoicing between the service departments and warehouses. In the Enterprise Modeling Manager (EMM) module, you can define internal trade relationships based on external material delivery or direct delivery with dedicated invoicing methods between service departments and warehouses.

You can also to a limited extent record and process service operations in a multilogistic company environment.

Refer to "Multicompany Service" on page 149 for more information.

Multicompany Warehouse Management

You can define internal trade relationships between enterprise units or individual warehouses of the same logistic company to transfer materials, labor and other costs between warehouses, and to generate the associated invoices without using sales orders and purchase orders. For example, you can use this to transfer materials between warehouses in different countries.

You can define warehouse surcharges that are added to the actual costs of the materials either when they are issued from a warehouse or when they are received.

Refer to "Multicompany Warehouse Management" on page 153 for a summary of the multicompany warehousing functions.

Multicompany Freight Management

You can centrally manage and process freight orders (and order clusters), shipments and loads across multiple sites. In this way you get a clear insight in transport-related requirements, real optimization in the handling of freight orders, consolidation and planning of loads and shipments, reduction of costs, proper subcontracting of transport to carriers, and so on.

Refer to "Multicompany Freight Management" on page 157 for more information.

Multicompany Structures

2

This chapter describes:

- The various types of LN companies
- The multicompany structures that you can set up in LN
- The multicurrency systems that the companies can use

LN company

An LN company is both a database and a user's working environment.

Company as a working environment

A company is an LN user's working environment, which consists of a set of LN packages that you can use to process and manage business transactions, such as purchase orders, sales orders, and production orders, as well as the corresponding financial transactions. To work with LN, users log on to a specific company. Users can do the following:

- Use the packages implemented for the company. For example, if Service is not implemented for the company, the user cannot enter or manage service orders.
- Use the data stored in the company's database, and to which the users have access, to perform transactions.

Users that log on to different companies of the same multicompany structure can work with a different set of sales orders, production facilities, item cost prices, and so on.

Company as a database

LN stores data by company number. In this way, a company corresponds to a logical database in which all the data regarding logistic transactions or financial transactions is stored. The database can partially

exist uniquely for the company and partially contain database tables that the company shares with other companies.

For example, the company data includes data such as:

- Item data
- Sales orders
- Production plans
- Business partners (the customers and suppliers) with the credit limits, prices, and discount agreements that apply to them.
- Employees and production tools, with their costs and availability schemas
- The currencies used to calculate cost prices and inventory valuation, and in transactions with business partners

Company data

The company data consists of the following types of data:

Common master data

Common master data is used in more than one of the LN packages. You define the common master data in Common Data. For example, common master data includes:

- Item data
- Currencies and currency rates
- Business partners
- Enterprise modeling (EMM) data
- Calendars

Package master data

Package master data is specific for the package. You define the package master data in the individual LN packages, for example:

- Ledger accounts in Financials
- Item production schedule in Manufacturing
- Price books in Order Management
- Organization breakdown structure for projects, in Project

Dynamic data

Dynamic data is present in all LN. You create and change dynamic data when you carry out transactions such as:

- Enter a sales order.
- Calculate a budget.
- Release materials from a warehouse for production.
- Compute an interest invoice.
- Register the receipt of goods in a warehouse.

If you set up multiple companies in one LN system, the companies can share parts of the database. For example, two companies can share the item data but have their own tables of business partners and production plans. Therefore, a company corresponds to a logical database, while part of the physical database can be shared.

Sharing (static) master data places different requirements on the database than sharing dynamic data. Refer to "Multicompany Data Sharing" on page 167 for details.

Company types

Depending on the type of data that the company controls and the types of processing for which you use the company, a company can be:

- A logistic company
- A financial company
- Both a logistic and a financial company

Logistic company

A logistic company is only used for logistic transactions such as the production, sales and purchase, and transportation of goods. A logistic company can consist of multiple enterprise units that are linked to various financial companies. In this way, LN can post the financial transactions that correspond to the logistic activities to various financial companies.

A logistic company contains the following LN packages:

- Common Data
- Some or all of the other LN packages, with the exceptions of Central Invoicing and Financials

Financial company

The main function of a financial company is to register all accounting transactions that result from the activities carried out in the enterprise units that are linked to the financial company. These activities consist of the operational and logistical transactions that result from a logistic goods flow and from production, service, warehousing, and support activities.

A financial company contains the following LN packages:

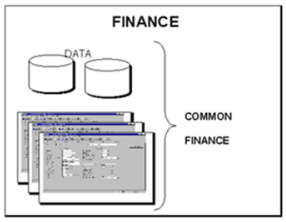
- Common Data. This includes Taxation and Currency Initialization
- Central Invoicing
- Financials

To register the accounting transactions, Financials transforms the logistical data about activities and goods transactions into accounting data. Other functions of a financial company are to register the purchase and sales invoices created in the Order Management, Warehouse Management, Service, Project, and Manufacturing packages. These invoices are registered in Central Invoicing.

Financials also includes a large number of functions for purely financial activities, such as cash management, credit management, overhead cost interpretation and allocation, fixed asset registration, and financial reporting. These functions only occasionally pass on information to the logistic company.

The Finance component consists of data and functionality for the following SSA ERP_{LN} packages:

- Common
- Central Invoicing
- Finance
  - General Ledger
  - Account Payable
  - Account Receivable
  - Cash Management
  - Fixed Assets
  - Financial Statements
  - Controlling



The only hierarchy among finance companies is via the **group company** designation of one of the finance companies.

One of the currencies a financial company uses is marked as the local currency. LN uses the local currency to perform the accounting and tax reporting in a country's local currency. You are legally required to perform a business's accounting for each country. Therefore, financial companies are restricted to one currency area.

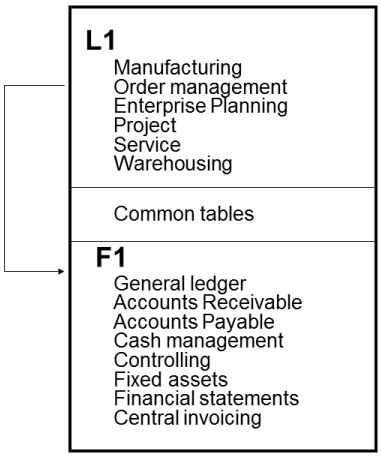
LN records document dates in Financials in the local time, according to the financial company's time zone, which is required for posting the financial data to the correct financial periods. Therefore, a financial company is also restricted to one time zone. For details, refer to "Time zones" on page 61.

Logistic and financial company

You can create a company that is both a logistic and a financial company. The company database then contains the logistic and the financial data. This type of company contains the following packages:

- Common Data
- Financials
- Central Invoicing
- Some or all of the other LN packages

You can still link enterprise units of a company of type logistic and financial (Both) to other financial companies, depending on your financial reporting requirements. For example, the company of type **Both** can then be the financial group company, as described in the following section.



Operational company

The operational company is the company to which a department, warehouse, project, or internal business partner belongs. This is usually the company in which the entity was created. Transactions originating from the department, warehouse, or project can only be created in the operational company.

The operational company of a logistic department, a warehouse, a project, or an internal business partner must be of the type **Logistic** or **Both**. The operational company of an accounting office must be of the type **Financial** or **Both**.

Financial group company

A financial group company is a regular financial company to which a number of other financial companies are linked. You can use a financial group company to do the following:

- Process the corporate and administrative accounting.
- Accumulate the data from the group's financial companies for consolidated financial reporting.
- Perform central cash management processes, such as payments and direct debit.

The group company is usually one of the regular financial companies of the multicompany structure, which additionally acts as the group company. You do not have to create a separate financial company to be the group company.

Creating a dedicated financial company is not recommended, because this has the following disadvantages:

- An extra company for which table sharing must be set up correctly
- An increased number of companies in the multicompany structure, which affects the performance without returning any benefit.

Multicompany structures

To reflect a complex organization, an LN system usually consists of multiple companies. A logistic company can cross borders and include several plants or sites in different countries. However, financial companies are restricted to one currency area to conduct the accounting and tax reporting of each site in each country's local currency.

Note: Hardware limitations and restricted data replication possibilities can, in some cases, force you to define a separate logistic and financial company for each site or LN server.

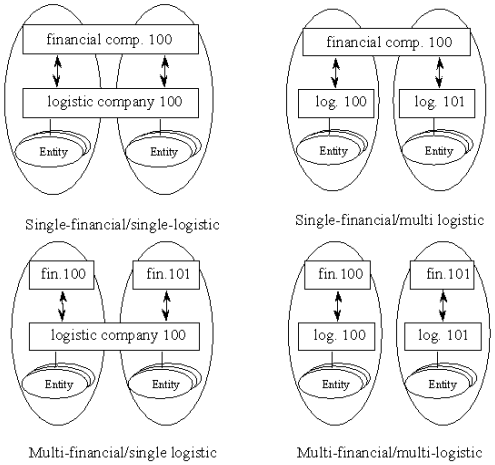
The companies of a multicompany structure must share specific tables and can optionally share other tables. This requirement is discussed in greater detail in "Multicompany Data Sharing" on page 167.

The financial results of the activities that are carried out in a logistic company, such as production, purchase of materials, and the sales of the product, are posted to financial companies. Logistic companies contain enterprise units, which are linked to financial companies for their financial reporting. In this way, the logistic and financial companies are linked to each other through the enterprise units.

The logistic and financial companies that have links with each other form a multisite, multicompany structure.

Note: A large organization can consist of multiple multicompany structures. In this case, each multicompany structure consists of a set of companies and servers. Separate multicompany structures cannot share data.

You must use sales and purchase relations for goods transfer between multicompany structures in the same way as for goods transfer to and from external business partners:



Multicompany structure types

Depending on your business requirements and the technical possibilities, you can set up the following combinations of logistic companies and financial companies in a multicompany structure, as shown in the previous figure:

- Single logistic/single finance
- Single logistic/multifinance
- Multilogistic/single finance
- Multilogistic/multifinance

Note: The companies of a multicompany structure must all use the same currency system. If parts of your organization need to use different multicurrency systems or different sets of home currencies, you must create separate multicompany structures for these parts. For more information about currency systems, refer to "Multicurrency Systems" on page 37.

Single logistic/single finance

In a single logistic/single finance (stand-alone) company structure, all processing is carried out in one company and only one database is used. For example, in a single logistic/single finance company structure, you can use only one standard cost price for each item and one bill of material for each item.

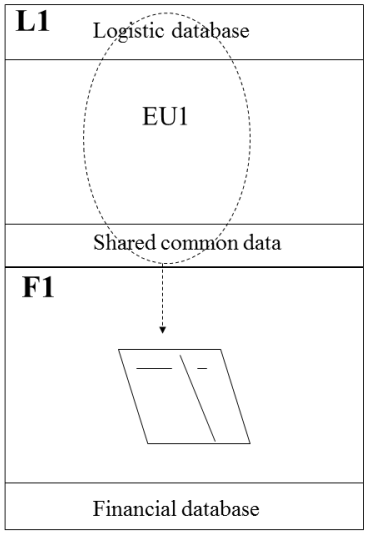
You must define at least one enterprise unit in the logistic company, and link the enterprise unit to the financial company.

A single logistic/single finance company structure can consist of:

- One logistic company and one separate financial company
- One company of type **Both**

How you organize the single logistic/single finance company structure depends on your requirements. For example, you can create a separate logistic and financial company if:

- You intend to add more logistic or financial companies in the future.
- The logistic company and the financial company run on different servers and use separate databases.

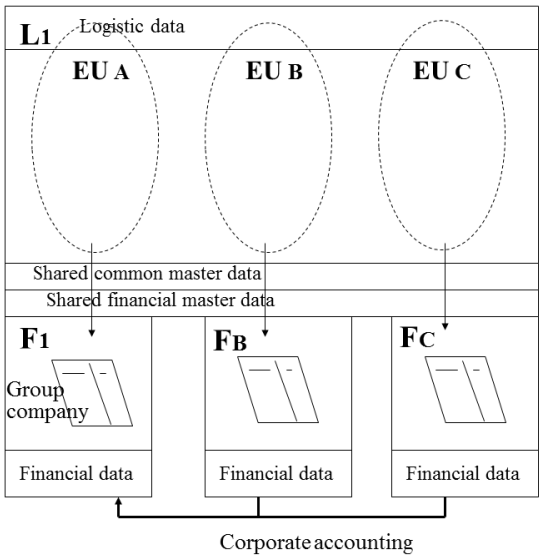


Single logistic/multifinance

In a single-logistic/multifinance company structure, you manage and control the manufacturing and distribution processing centrally in one company, while you conduct the accounting in multiple financial companies. This can be the preferred solution for multinational logistic companies.

You can create an enterprise unit for each financial or fiscal unit in the logistic company and link the enterprise units to separate financial companies. In this way, you can manage all your enterprise's logistic processing centrally and perform separate accounting in the local currency for the plants, sites, and warehouses of your organization that are in different states or countries.

You must use a dependent multicurrency system, as described in "Multicurrency Systems" on page 37.



You must assign all the entities of a logistic company, such as warehouses, work centers, projects, sales offices, and purchase offices, to an enterprise unit. The transactions are posted to the financial company that is linked to the enterprise unit. If the financial companies on the debit differ from the credit entries of the transaction, LN generates intercompany transactions. For more details, refer to "Multicompany Financials" on page 73.

You can link the financial companies to a financial group-company to perform corporate accounting and financial administration in the group company.

Multilogistic/single finance

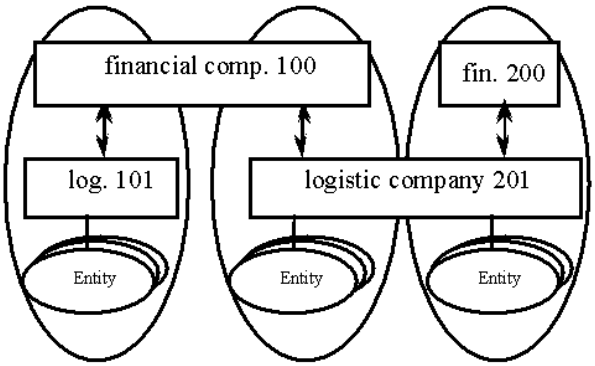
In a multilogistic/single-finance company structure, you can manage the manufacturing and distribution processes in a number of separate companies and perform the financial accounting in one company. You must create one or more enterprise units in each logistic company and link all the enterprise units to the financial company.

For example, you can use a multilogistic/single-finance structure for an organization that consists of a number of separate production sites in one country that use their own BOM and production process but that form one legal entity. The reason for this is because BOMs, and the item cost prices based on them, are specific for each logistic company.

Multilogistic/multifinance

In a multilogistic/multifinance company structure, you can manage the manufacturing and distribution processes of a number of separate companies and perform separate financial accounting for the

enterprise units or groups of enterprise units. You must create one or more enterprise units in each logistic company, and link the enterprise units to the appropriate financial companies.



combined multi-financial/multi-logistic

You can link the financial companies to a financial group company to perform consolidated financial reporting in the group company.

A multilogistic/multifinance company structure includes aspects of the other three types. In one multicompany company structure, one company can process as a single-logistic/single-finance company structure, and several other companies can process as single-logistic/multifinance and multilogistic/single-finance company structures. All combinations are technically possible.

Dynamic logistic - financial company switching

By default, if a user starts a session, LN opens that session in the user's default company. A user's default company is defined in the in the User Data (ttams1100s000) session. Users can manually switch to another company, which means that they switch to the data set of that company. If a user runs a session in the incorrect company, for example, a financial session in a company of type **Logistic**, the data can become corrupt.

To prevent this problem, set up dynamic logistic-financial company switching. If you have set up dynamic logistic-financial company switching, and a user starts a logistic session, LN automatically switches to the logistic company. If the user then starts a logistic session, LN switches to the appropriate financial session.

To set up dynamic logistic-financial company switching:

1. In the Logistic - Financial Company Switching (ttaad0101s000) session, select the **Enable Dynamic Logistic - Financial Company Switching** check box.
2. In the Companies (ttaad1100m000) session, select the type for each company: **Logistic**, **Financial** or **Both**. Convert the changes to the runtime data dictionary. Ensure that the company type is in line with the Enterprise Management Module (EMM) within the LN applications.
3. Specify which sessions must be started in which company. Run the Start Company by Module (ttaad1105m000) session and :

- Add all logistic modules and set **Company** to **Logistic**.
- Add all logistic modules and set **Company** to **Financial**.
- Add the remaining modules and set **Company** to **Current**.

4 For each user, define the default company number, logistic company and financial company. Run the User Data (ttaad2500m000) session and double-click a user to start the details session.

Note: After changing the user data you must convert the changes to the runtime data dictionary through the **Specific** menu in the User Data (ttaad2500m000) session. The users must restart their bshell to load the new settings.

After completion of this procedure, LN automatically switches to the correct company when a user starts a session.

In addition, users can still use the **Change Company** command in the Worktop or Webtop to switch manually to another company.

Multicompany configuration drivers

You must consider the following critical decision points to determine the requirements for a multicompany structure:

- Currency requirements must be examined and aligned with one of the currency systems available in LN.
- Legal entities with site-specific balance sheets must be mapped on separate financial companies.
- Planning constraints/capabilities result in multiple logistic company considerations.
- One standard cost price for each item or a separate cost price for each logistic company inLN can be a factor in deciding the number of logistic companies needed in a multicompany structure.

Multicurrency Systems

3

This chapter describes the currency systems that you can use in LN and describes the following concepts:

- Home currencies
- Multicurrency systems
- Currency exchange rates

Home currencies

A company's home currencies are the base currencies that the company uses to express and register all amounts internally. An LN company can use up to three internal home currencies. In addition to the home currencies, a company uses external currencies for the transaction with business partners.

You select a company's home currencies in the EMM module in Common Data. These types of home currencies exist:

Local currency
The legal currency of the country in which the company is established. Tax reporting must usually be carried out in the local currency. In a logistic company, LN uses the local currency to store the amounts for which you do not specify a specific currency. For example, inventory costs in Warehouse Management.

Reporting currency
In addition to the local currency, a company can use one or two reporting currencies. If the company uses reporting currencies, LN calculates and stores the local currency amounts both in the local currency and in the reporting currencies.

In sessions that display home currency amounts, you can use the Rotate Currency command to display the amount in each of the home currencies in turn. If you print a report, you can usually select the home currency to be used for the report.

Reference currency

You must select one of the home currencies as the reference currency.

Note that in the standard currency system (default), the reference currency:

- Can be defined independently of the local and reporting currencies.
- Can be, but does not have to be, one of the home currencies.
- Can be used to express amounts that represent balances across multiple companies, for example, lot prices in Warehouse Management.

For currency systems other than the standard currency system, the reference currency is a company's base currency for all calculations between currencies. All companies of a multicompany structure must use the same reference currency. This concept is described in more detail later in this chapter.

Transaction currencies

In addition to the home currencies, companies use a number of transaction currencies, which are the currencies used for transactions with your business partners. For example, the following amounts are expressed in transaction currencies:

- Contract amounts
- Invoice amounts
- Price lists

You can select a default transaction currency for each business partner.

Currency exchange rates

LN uses the currency exchange rates that you specify in the Tables (MCS) module to convert transaction currency amounts to the home currencies. Which currency exchange rates you must define depends on the currency system, as described later in this chapter. For each currency rate, you can define an effective date. Each rate is valid until the effective date of the next currency rate.

Currency rate types

You can use the currency rate types to link different currency exchange rates to different types of transactions. For example, you usually want to use a different rate for sales transactions, purchase transactions, internal transactions and computations, and external reports.

In a dependent multicurrency system, LN uses the internal currency exchange rate to convert amounts from the reference currency into the other home currencies. The external exchange rate type can be

used for external reports such as the European sales listing the Intrastat declaration, and for VAT reporting in Financials. For example, you can use the external exchange rate type to define the rates used by the central bank of your country or state.

You can select the default currency exchange rate types for sales transactions, for purchase transactions, for internal transactions and computations, and for external reports of a company in the Companies (tcemm1170m000) session of the Enterprise Modeling Management (EMM) module.

Multicurrency systems

The company's currency system determines:

- The number of home currencies that the company can use.
- The method that LN uses to convert amounts in transaction currencies to the home currencies.

If the companies form a multicompany structure, the companies must all use the same currency system. Specific rules apply to the currencies that each company can use, depending on the currency system. These rules are described later in this chapter.

You select a company's home currencies and currency system in the Companies (tcemm1170m000) session of the Enterprise Modeling Management (EMM) module in Common Data.

In the menu: **Common Data > Enterprise Modeling Management > Entities > Companies (tcemm1170m000)**

This table shows the fields of the Companies (tcemm117m000) session:

Field	Description	Mandatory
Company Type	The company type reflects the type of data that the company controls and the types of processing for which you use the company. You can select: **Logistic** An LN company used for logistic transactions, such as the production and transportation of goods. All the logistic data related to the transactions is stored in the company's database. A logistic company contains Common Data and some or all of the other packages, with the exceptions of Financials and Invoicing. **Financial** A company that you can use to post financial data in Financials. You can link one or more enterprise units from multiple logistic companies to one financial company. A financial company contains these packages: • Common Data • Financials	Yes

Field	Description	Mandatory
	• Invoicing **Both** The company database contains both logistic and financial data. A company of type **Both** contains these packages: • Common Data • Financials • Invoicing • Some or all of the other packages	
Currency System	You can select one of the following currency systems to be used in your company: • Standard (recommended): A currency system in which foreign currency transactions are translated straight from the transaction currency to the local currency, without triangulation through the reference currency. By default, currencies are directly translated from the transaction currency into the reporting currency; however, reporting currencies can also be translated from the local currency.. Note: The standard currency system replaces the other currency systems previously used in LN. • Single: The company uses only one home currency. This home currency is also the reference currency. This currency system is especially for use for companies that operate in a single country. • Dependent: The company can use up to three home currencies. For most entities, the financial company determines the local currency that is used. All transactions are registered in all the home currencies.. Currency rates are defined between the external currencies and the reference currency, and between the reference currency and the other home currencies.. This currency system is particularly suitable for companies that operate in multiple countries, or that require reports in multiple currencies. • Independent: The company can use up to three home currencies. A highly variable currency rate exists between the home currencies. This currency system is particularly suitable for companies that operate in high-inflation countries where financial reporting is required in a strong currency other than the local currency.	Yes
Reference Currency	The currency in which balances of entities shared by all the companies of a financial company group are expressed. For example, LN uses the reference currency for business partner balances.	Yes

Field	Description	Mandatory
Transition Currency	The euro currency that you defined in the Currencies (tcmcs0102m000) session. This currency will be seen as the euro currency in various processes in the Cash Management (CMG) module.	Yes
Local Currency	The currency of the country in which the company is located, and/or the currency in which you report to the local tax authorities.	Yes
Reporting Currency 1	One of the companies' home currencies, other than the local currency, that you use, for example, to report financial results to management.	Yes for standard, dependent or independent currency system.
Reporting Currency 2	One of the companies' home currencies, other than the local currency, that you use, for example, to report financial results to management.	No
Translation Method	Choose one of the following: • From Transaction Currency . (default value). All foreign currency transactions will be translated from the transaction currency into the reporting currency. • From Reporting Currency . All foreign currency transactions will be translated from the local currency into the reporting currency. • Not Applicable	Yes for standard currency system.
Rate Determination Method	Specify one of the following: • Adopt Transaction's Exchange Rate Type • Own Exchange Rate Type • Company's Default	Yes for standard currency system.
Exchange Rate Type	The factor by which an amount in a different currency is multiplied to calculate the amount in the currency base. Foreign currency amount * currency exchange rate = currency base amount • Purchase/Sales: The exchange rate type used to convert purchase or sales transaction amounts to the company's home currency or home currencies.. Note: In a multicompany structure, you must select the same default purchase exchange-rate type for each company. • Internal: The exchange rate type that is used for internal conversions, such as when inventory transfers occur between warehouses or work centers which utilize different currencies.	Yes

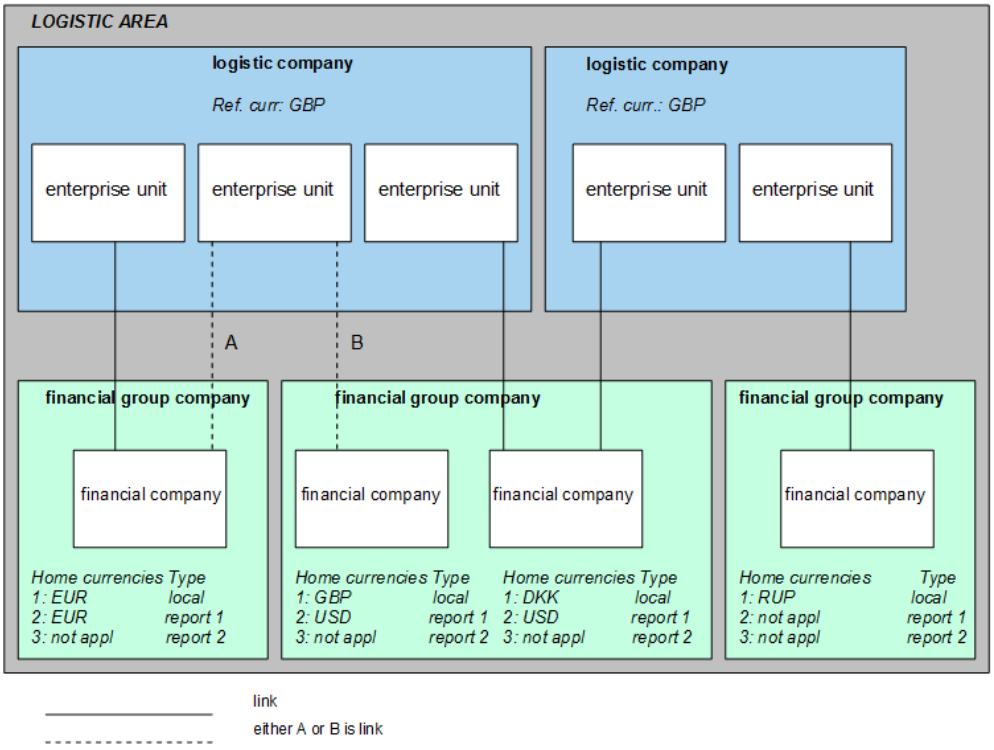
Field	Description	Mandatory
	• External: The exchange rate type that you can select for external reports such as the European sales listing the Intrastat report, and for VAT reporting in Financials. For example, you can use the external exchange rate type to define the rates used by the central bank of your country or state.	
Time Zone	For companies of type **Financial** and **Both**, you must select a time zone. LN uses the financial company's time zone to post transactions with the correct dates and to convert amounts with the currency exchange rates that are valid at the transaction dates.	Yes for company type Financial or Both. No for company type Logistic.
Calendar Code	The company's default calendar.	Yes

The following sections describe multicurrency systems in detail.

Standard currency system

In a standard currency system, foreign currency transactions are translated straight from the transaction currency to the local currency, without triangulation through the reference currency. By default, reporting currencies are directly translated from the transaction currency into the reporting currency. However, reporting currencies can also be translated from the local currency.

The following figure shows the possible links between logistic companies and financial companies in a multisite environment that uses a standard currency system.



Currency rates in a standard currency system

In a standard currency system, LN converts amounts from the transaction currency directly into the local currency and the reporting currencies.

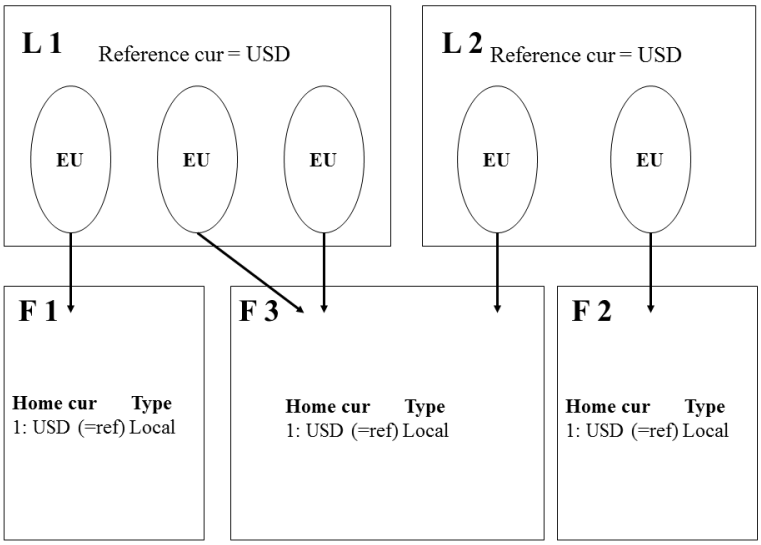
You must define the currency rates between:

- All foreign currencies and all home currencies of the financial companies of a group.
- All foreign currencies and the reference currency.

Single-currency system

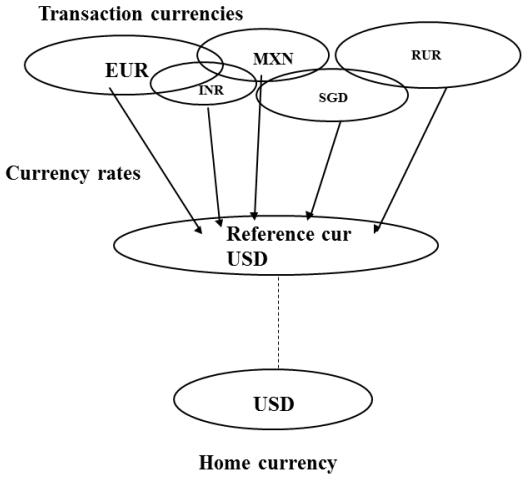
In a single-currency system, only one home currency is used in the multicompany structure. This currency is the reference currency, as well as the local home currency of the logistic companies and all financial companies of the multicompany structure.

The following figure shows the possible links between logistic companies and financial companies in a multicompany structure that uses a single-currency system. No additional home currencies (reporting currencies) are used.



Currency rates in a single-currency system

In a single-currency system, you only need to define the currency exchange rates between the transaction currencies and the companies' home currency, which is also the reference currency. The following figure shows the currency rates that LN uses in a single-currency system:



Example

An organization must choose a currency system carefully, with particular considerations of future operations. A single-country organization usually uses a single-currency system. LN has the flexibility to enable the company to change to another currency system through the Currency Initialization (CRI) module.

Dependent multicurrency system

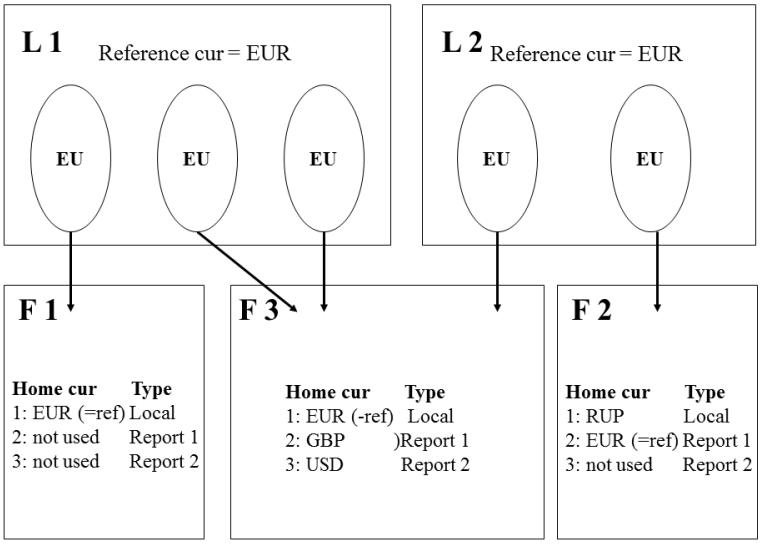
In a dependent multicurrency system, all logistic companies and financial companies of a multicompany structure must use the same reference currency.

For the financial companies, you can select up to three home currencies. One of these must match the reference currency while the other home currencies can differ for each financial company.

In a logistic company, LN uses the local currency of the financial company to which an enterprise unit is linked to store amounts.

In a financial company, LN stores all transaction amounts in all the home currencies. The transaction amounts are first converted into the reference currency, and then the transaction amounts in the reference currency are converted into the other home currencies. In Financials, you can often rotate the currency on forms. In Operations Management, however, you can only rotate the currency in a number of sessions.

The following figure shows the possible links between logistic companies and financial companies in a multicompany structure that uses a dependent multicurrency system:



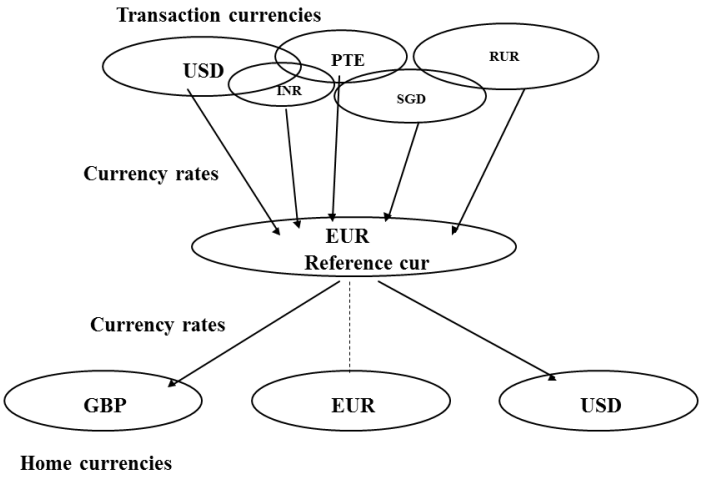
Currency rates in a dependent currency system

In a dependent currency system, LN converts the transaction amounts to the home currencies through the reference currency. LN uses the internal currency exchange rate to convert amounts from the reference currency into the other home currencies.

You must define the following currency exchange rates in a dependent multicurrency system:

- Between the transaction currencies and the reference currency
- Between the reference currency and the other home currencies

The following figure shows how LN uses the currency rates in a dependent multicurrency system:



Independent multicurrency system

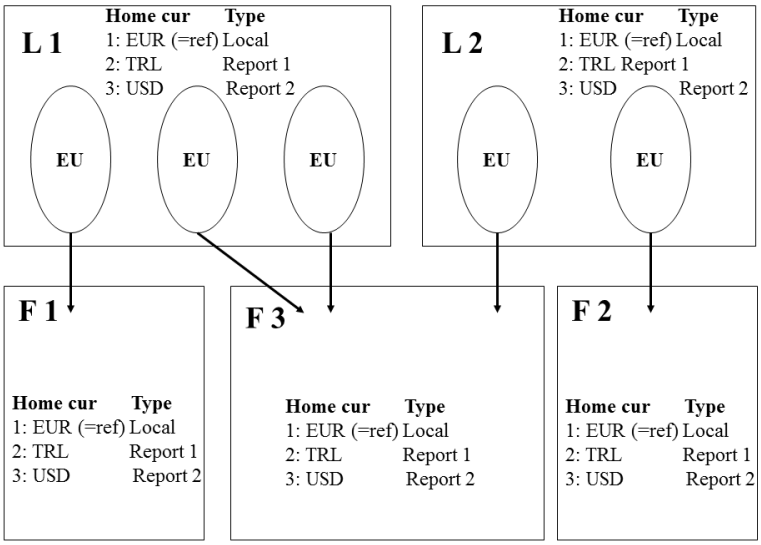
In an independent multicurrency system, LN stores all transaction amounts in all the home currencies. LN converts the transaction amounts directly from the transaction currency into each of the home currencies.

No currency rates are used between the home currencies of an independent currency system. Therefore, the home currencies are independent of each other.

In an independent multicurrency system, all financial companies and logistic companies of a multicompany structure must use the same local currency, reporting currency 1 and reporting currency 2, and the same reference currency. The reference currency is required for technical reasons, not for functional reasons.

LN stores all transaction amounts in all the home currencies. In most sessions, you can click Rotate Currency to display the amounts in each home currency in turn.

The following figure shows the possible links between logistic companies and financial companies in a multicompany structure that uses an independent multicurrency system:

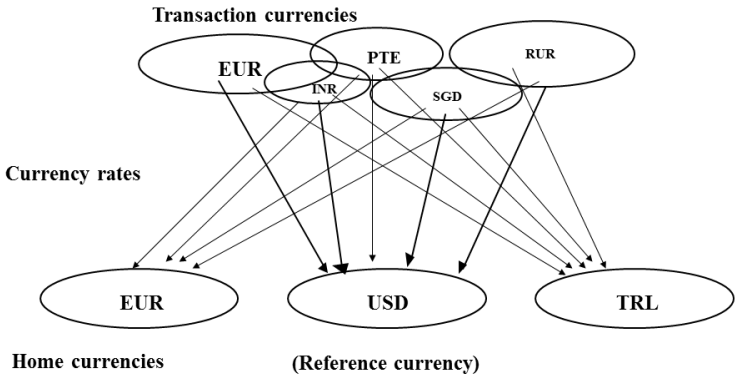


All companies of a multicompany structure with an independent currency system must have the same local currency. Therefore, this type of system is restricted to one currency area or one country.

The independent multicurrency system is intended for use in high-inflation countries. The (less stable) national currency is the local currency for reporting to the local authorities. At the same time, you can perform the company accounting in a more stable currency, such as dollars.

Currency rates in an independent multicurrency system

In an independent multicurrency system, you must define the currency exchange rates between the transaction currencies and all home currencies. The currency rates between the home currencies are not used. The following figure shows the currency rates that LN uses in an independent multicurrency system.



Exchange gain and loss calculation

Converting the transaction amounts directly from the transaction currency into the home currencies can result in inconsistencies between the transaction values in the different currencies.

For example, the exchange rates from USD to ITL and from DEM to ITL can be inconsistent with the exchange rate between USD and DEM. This can be caused by shifting exchange rates between the currencies, which is often the case with currencies that are subject to substantial inflation.

In an independent multicurrency system, you can use the Exchange Gain and Loss Calculation (tfgld5202m000) session in Financials to calculate the differences in values that are caused by shifting currency rates.

LN posts the differences to a specific ledger account that you can specify in the Company Parameters (tfgld0103s000) session in Financials.

Summary of the currency rules

For multiple financial companies in a group:

- The currency systems must be the same for all companies.
- The reference currency must be the same for all companies.
- The company type must be either Both or Financial.

For a standard currency system:

- The home currency is a local currency, or a the reference currency.

- The reference currency can be defined independently of the local and reporting currencies.
- The reference currency can be, but does not have to be, one of the home currencies.
- The reference currency can be used to express amounts that represent balances across multiple companies, for example, lot prices in Warehouse Management.
- The rate belonging to the exchange rate type specified on the transaction is used to translate the transaction amount into the local currency amount. The currency rate used for the translation into the reporting currency depends on the exchange rate type specified on the ledger account to which it is posted.

For a single-currency system:

- The home currency must equal the reference currency.
- Exchange rates are only required for one currency.

For a dependent currency system, note the following:

- It is not mandatory that all companies have the same home country.
- The reference currency must be the same for all companies in the group.
- Either the local currency or one of the reporting currencies must equal the reference currency.
- Exchange rates of transaction currencies are only required for the reference currency. The rates for the two other home currencies are calculated against the reference currency.

For an independent currency system:

- All home currencies must be the same for all companies in the group.
- All home currencies must have the same sequences for all companies in the group.
- All transactions are logged in the three home currencies.
- A maximum of three common home currencies per logistic and financial company is permitted.
- Exchange rates of transaction currencies must be maintained for all home currencies.

Enterprise Modeling Management

4

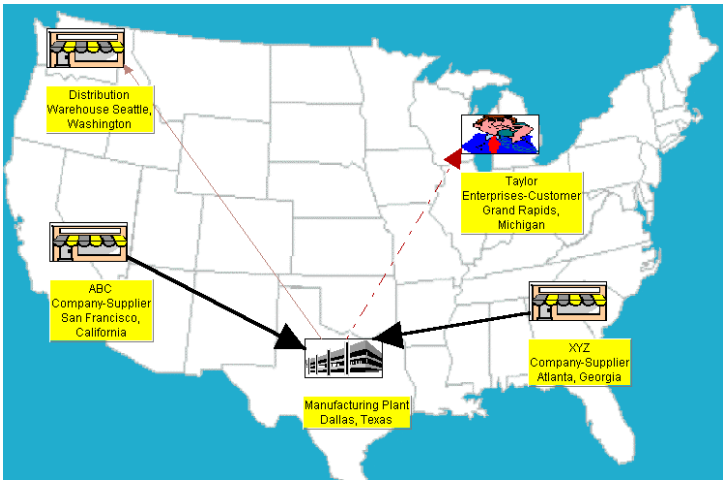
This chapter describes how you can define the entities of your LN system.

For a description of the complete procedure to set up a company, refer to the document *User's Guide for How to Set up a Company (U9503* US)*.

Enterprise modeling

In the Enterprise Modeling Management (EMM) module, you can define a structure of companies, enterprise units, and the relationships between the enterprise units.

Alternatively, you can model the enterprise structure by using the Dynamical Enterprise Modeler and then import the model into the EMM module. For more information, refer to *Infor LN User's Guide for Dynamic Enterprise Modeler (U7169* US)*.



The Enterprise Modeling Management (EMM) module forms the link between the enterprise model and the LN company databases.

In the Enterprise Unit (tcemm0630m000) session, you can create the entities that belong to an enterprise unit, such as departments and warehouses. Entities that are linked to an enterprise unit are called key entities.

The other LN packages refer to the EMM module to retrieve the enterprise modeling information of each entity. The enterprise modeling information mainly consists of:

- The company's currency system and home currencies.
- The enterprise unit to which an entity is linked and, through the enterprise unit, the financial company to which an entity is linked.
- The goods transfer relationships between the entities, and the relationship parameters.

The companies of a multicompany structure must share some EMM database tables, as well as some other tables of the Common Data package. For more information, refer to the *User's Guide for Multicompany Table Sharing (U9505* US)*.

Multicompany structure building blocks

A multicompany structure consists of one or more of these building blocks:

Company
For details about company types and multicompany structures, refer to "Multicompany Structures" on page 25.

Enterprise units
Key entities are the components of enterprise units. An enterprise unit consists of any number of these types of key entities:

- Warehouses
- Departments, which can be sales offices, purchase offices, work centers, accounting departments, and service offices
- Projects: Usually one enterprise unit is created to contain one project and the project's related sales office and warehouses.

Internal business partners
If the internal trade between the enterprise units of one logistic company must be invoiced, you must define internal business partners and link the enterprise units to them. For more information, refer to "Business Partners" on page 65.

Relationships
A relationship in the multicompany context defines the type of trade that can take place between two entities of the same logistic company. LN supports these types of trade:

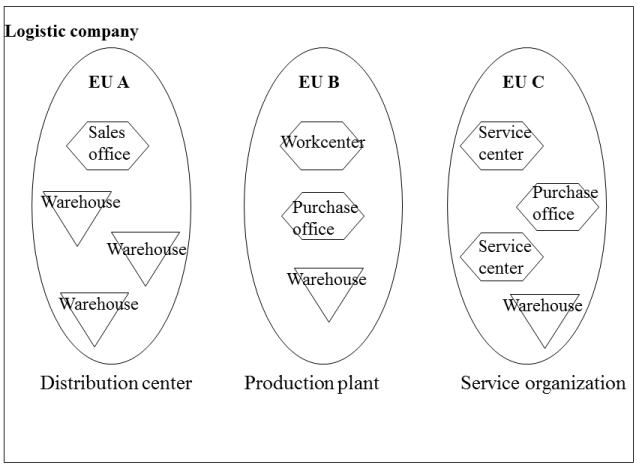
- Internal material delivery
- External material delivery
- Direct delivery
- Internal subcontracting for depot repair

If you define a trade relationship between two entities, you specify the pricing and the type of financial settlement to be applied when materials, labor or other costs are transferred between the entities. For more information, refer to "Internal trade relationships" on page 54.

Clusters
A cluster is a group of entities that are not necessarily related to one financial company or logistic company. The only clusters used in LN are clusters of warehouses used in Enterprise Planning.

Enterprise units

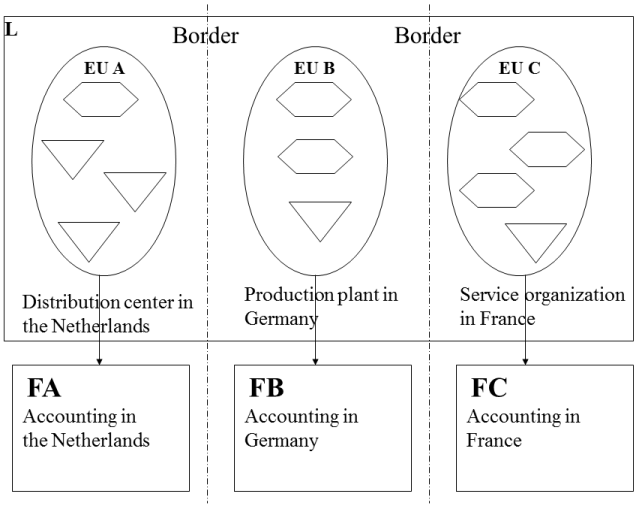
An enterprise unit is a financially independent part of your organization that consists of a combination of entities such as departments, work centers, warehouses, and projects. The enterprise unit's entities must all belong to the same logistic company, but a logistic company can contain multiple enterprise units. For example, an enterprise unit can be a manufacturing plant, an assembly plant, a sales organization, a distribution center, or a service organization, as shown in the following figure:



Each enterprise unit has only one link to a logistic and to a financial company. If you carry out logistic transactions between enterprise units, these transactions are posted in the financial companies to which each enterprise unit is linked.

You can use enterprise units to perform separate financial accounting for parts of your business. For example, you can define enterprise units for separate parts of your organization that belong to one logistic company but that are located in different countries.

LN can then perform the accounting of each enterprise unit in each country's national currency and in the financial company linked to the enterprise unit, as shown in the following figure:



Clusters

A cluster is a group of entities that are not necessarily related to one financial company or enterprise unit. For example, you can specify a cluster of the warehouses in which you store spare parts in a specific geographical area, independent of the financial companies or the enterprise units to which the warehouses belong.

Note: In LN, clusters are only used for Distribution Requirements Planning (DRP) in Enterprise Planning.

Clusters are dynamic. If you assign an entity to a cluster, you must specify an effective date and you can optionally specify an expiry date.

Clusters in Enterprise Planning

In Enterprise Planning, you can define clusters as groups of warehouses that are connected by supplying relationships. The warehouses of one cluster must belong to the same logistic company.

Internal trade relationships

You can define internal trade relationships to apply the LN pricing and invoicing to the transfer of material, labor, or other costs between the entities of one logistic company, without using sales orders and purchase orders.

If you do not define an internal trade relationship between two entities, all internal trade between the entities takes place against actual costs and without invoicing.

If you define a relationship between entities, you must specify an effective date and you can optionally specify an expiry date.

You must define an internal trade relationship between entities if one or both of the following is required:

- LN generates invoices for internal trade in the same logistic company.
- LN applies a sales order price to the goods or a surcharge percentage added to the actual costs.

If you do not define an internal trade relationship:

- LN generates intercompany transactions if the enterprise units are linked to different financial companies.
- LN does not generate any financial postings if the enterprise units are linked to the same financial company.

To define the properties of an internal trade relationship, use the Internal Trade Details (tcemm2151m000) session. In the Enterprise Modeling Management Parameters (tcemm0100m000) session, you can specify default internal trade details for these types of trade:

Internal Material Delivery
Ownership changes directly from one internal legal entity to another internal legal entity.

External Material Delivery
Ownership changes from one internal legal entity to an external business partner (or affiliated company) based on an order of another legal entity, which will do the external invoicing.

Direct Delivery
Ownership changes from one external legal entity to another external business partner based on two orders from different internal legal entities.

Internal Subcontracting for Depot Repair
Operations or activities are carried out by one internal legal entity on behalf of another internal legal entity, and there are costs, for example, material or labor, associated with these operations or activities.

You can link an internal trade relationship to a pair of enterprise units in the Enterprise Unit - Enterprise Unit Relationships (tcemm0634m000) session.

You can link an internal trade relationship to a pair of entities in the Entity – Entity Relationships (tcemm2110m000) session.

If LN requires internal trade between entities and no internal trade details were defined between that pair of entities, LN applies the internal trade details between the related enterprise units. If no internal trade details were defined for the related enterprise units, LN applies the default internal trade details, if available.

Defining internal trade relationships between entities of the same enterprise unit can be required, for example, in the United States, where internal trade between states must always be invoiced.

Note: Sales and purchase transactions always control internal trade between entities outside the logistic company, such as the affiliated-company business partners and external business partners.

Internal trade relationships between enterprise units

You define the relationships between the enterprise units in EMM. These relationships are the default relationships between all the entities of the enterprise units in the EMM module. You define the relationships between the key entities in the EMM module.

Internal trade relationships between entities

You can define the following internal trade relationships between many pairs of entities in LN. For details, refer to the online Help of the Entity - Entity Relationships (tcemm2110m000) session.

If you release the materials for production the Shop Floor Control (SFC) module of Manufacturing, you do not want to use an invoicing relationship. Therefore, you do not need to define an internal trade relationship between a warehouse and a work center.

Purchase office and sales office

If you define a relationship between a purchase office and sales office or between a purchase order and a service office, LN can generate internal invoices between the financial companies that are linked to the offices. For example, the relationship between a purchase office and a sales office is required if the sales office receives an order for goods that are not in stock. The sales office can request the purchase office to purchase the goods and deliver them directly to the customer. The sales office invoices the customer, and LN generates an invoice from the purchase office to the sales office.

Warehouse and sales office or service department

If you define a relationship between a warehouse and a sales office or a service department, LN can generate internal invoices between the warehouse and the departments.

These relationships are required in the following situations:

- If an invoice is required for legal reasons or administrative purposes.
- If the warehouse that issues the goods and the sales office that bills the business partner for the goods belong to enterprise units that are linked to different financial companies.
- If the service department that issues the invoice to the business partner and the warehouse that issued the spare parts belong to enterprise units that are linked to different financial companies.

In addition, a service engineer can return items on a service order by using delivery type To Warehouse, or delivery type From Warehouse with a negative issue. Similar to external material delivery between a warehouse and a sales office, Warehouse Management checks the relationship between the warehouse and the service department and, if required, releases the invoicing data to Invoicing. In Invoicing, a credit note from the warehouse to the service department is created.

Shipping office and sales office or purchase office

LN generates freight orders for delivery of the goods on sales orders and purchase orders.

The shipping office that is linked to the issuing warehouse or the receiving warehouse is responsible for planning the delivery and pays the carrier’s invoice.

The sales office invoices the business partner for the order, or the purchase office pays the business partner.

If you define an internal trade relationship between the shipping office and the sales office or purchase office, LN can generate the internal invoices between the shipping office and the sales office or purchase office to balance the accounts.

Shipping offices and warehouses

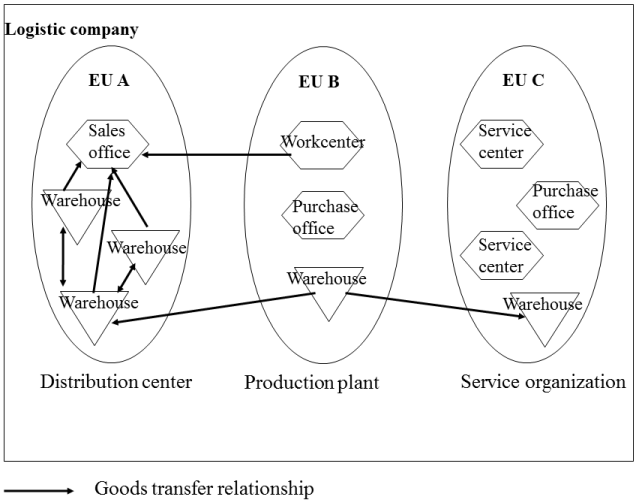
If a freight order is created for a warehouse transfer order, two warehouses are involved. If the warehouses are linked to different shipping offices, two shipping offices are also involved. One of the shipping offices must plan the goods transfer, and one of the shipping offices or warehouses must pay the carrier's invoice.

You can define internal trade relationships between warehouses and between shipping offices to specify whether the issuing entity or the receiving entity is responsible for planning the goods transfer and paying the carrier's invoice. LN can generate the internal invoices between the entities involved to balance the accounts.

Between shipping offices

For warehouse transfer between warehouses that are linked to different shipping offices, you must define the relationship between the shipping offices.

The following figure provides several examples of the internal trade relationships that you can define in a multicompany structure:



Between warehouses

Relationships between warehouses can cross the boundaries of logistic companies.

For more information, refer to "Multicompany Warehouse Management" on page 153.

Accounting offices

To support tax registration in foreign countries for sales transactions and service transactions in a multicompany environment, you can define the following relationships between accounting offices and logistic offices and departments:

- From a Warehouse to an Accounting office
- From a Sales office to an Accounting office
- From a Purchase office to an Accounting office
- From a Service department to an Accounting office
- From a Shipping office to an Accounting office
- From an Accounting office to a:
  - Sales office
  - Purchase office
  - Service department
  - Accounting office
  - Warehouse

For details, refer to "Tax registration in a foreign country" on page 97.

Internal business partners

In addition to specifying the internal trade relationship between the enterprise units and the entities, you must link the enterprise units to internal business partners. In the logistic company in this figure, you must define three internal business partners and link the enterprise units EU A, EU B, and EU C to them.

The business partner data is complementary to the relationship parameters. For example, if the relationship parameters specify that internal pricing applies to the internal trade, LN retrieves the price from the internal price book used for the business partner.

Relationship parameters

Relationship parameters define some of the data that is relevant to the transactions. For example, the internal trade relationship parameters define:

- Price origin:
  - Actual costs
  - Commercial price
  - Sales order price
- Any surcharges
- Type of invoicing
- Currency to be used

The relationship parameters that you define in the EMM module overrule the default parameters of the relationship between the enterprise units.

Invoicing and pricing

The details that you define for the internal trade relationship determine how LN handles the financial side of the internal trade. The invoicing and pricing options available vary per type of trade:

	Type of Trade					
Invoicing/Pricing Option	**Internal Material Delivery**		**External Material Delivery**	**Direct Delivery**	**Internal Subcontracting for Depot Repair**	
Create Internal Invoice	cleared	selected	-	-	cleared/selected	cleared/selected
Subcontracting Pricing Method	N/A	N/A	N/A	N/A	Fixed Price	Time and Material

	Type of Trade					
Invoicing/Pricing Option	**Internal Material Delivery**		**External Material Delivery**	**Direct Delivery**	**Internal Subcontracting for Depot Repair**	
Material Pricing - Price Origin	Actual Costs	Actual Costs,Commercial Price	Actual Costs, Commercial Price, Sales Order Price	Actual Costs,Commercial Price, Sales Order Price, Purchase Order Price	N/A	Actual Costs, Commercial Price,Zero Pricing
Labor Pricing - Price Origin	N/A	N/A	N/A	N/A	N/A	Actual Costs, Commercial Price, Zero Pricing
Other Costs Pricing - Price Origin	N/A	N/A	N/A	N/A	N/A	Actual Costs, Zero Pricing

Internal Material Delivery
LN generates the invoices and prints the invoicing documents for the transfers between entities of the same logistic company. This invoicing is usually applied to internal trade between two warehouses that are located in separate countries (enterprise units). The invoices must accompany the goods when the goods cross the border.

External Material Delivery
LN generates the settlements between the entities in the financial companies to which the entities are related. You can print the invoice documents, if required. This invoicing usually applies to internal trade between a warehouse and a sales office, where the goods are not delivered to the sales office, but directly to the ship-to business partner.

Direct Delivery
LN generates the settlements between the entities in the financial companies to which the entities are related. You can print the invoice documents, if required. his invoicing usually applies to internal trade between a purchase office and a sales office, where the goods are not delivered to the sales office, but directly to the customer.

Internal Subcontracting for Depot Repair
LN generates the settlements between the entities in the financial companies to which the entities are related. You can print the invoice documents, if required. This invoicing usually applies to a work order to repair an item, linked to a maintenance sales order of another legal entity.

If the **Create Internal Invoice** check box is not available or cleared, LN generates intercompany transactions between the financial companies based on actual costs. For details about intercompany transactions, refer to "Multicompany Financials" on page 73. Transfer at actual costs and without invoicing is usually applied to internal trade between two work centers (WIP transfer).

For more details, refer to "Multicompany Invoicing" on page 103

Time zones

A time zone is a geographical region in which the same standard time is used. LN contains the world's time zones information in the Time Zones (ttaad0160m000) session in Tools. In the Time Zones (tcemm1100m000) session in the EMM module, you can select those time zones that you use and add a description to each time zone. The companies of a multicompany structure must share the Time Zones (emm100) table.

LN records dates and times of logistic transactions, such as the various types of order documents, transactions, postings shipments, and receipts in Universal Time Coordinated (UTC) time, which is the same in every geographical location around the world. For this reason, a logistic company is independent of time zones.

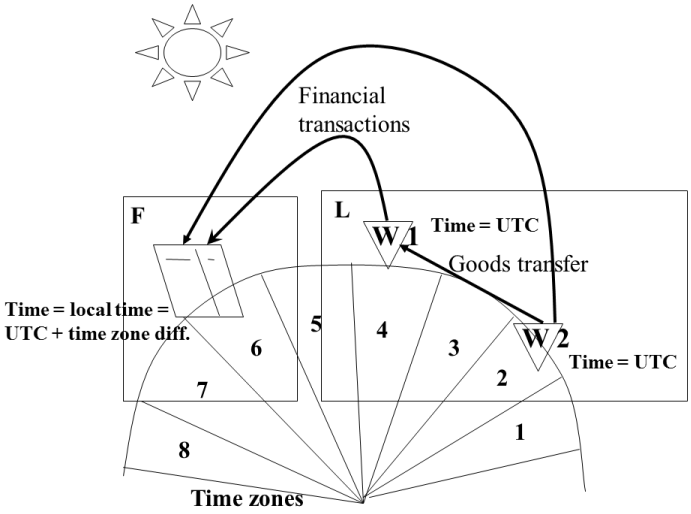
User time-zones

In the User Management module in Tools, you must link a time zone to each LN user by means of the user-data template. LN uses the user's time zone to display logistic transaction dates and times, which are registered in UTC time in the user's local time.

Financial company time-zones

You must select a time zone for each financial company in the EMM module. LN records postings in Financials with the local date and time. When transactions are transferred from the logistic company to Financials, LN converts the transaction date and time from UTC time to the financial company's local date and time. In this way, the amounts are posted in the correct financial periods in each financial company.

LN also converts the effective date and time of currency rates and tax rates, which you define in the logistic company, from UTC time to the financial company's local time. In this way, the correct rates are applied to convert the amounts into the home currencies in Financials and to compute the tax amounts, as illustrated in the following figure:



Address time zones

The time zone that you link to a financial company is only used in Financials. You can optionally link time zones to addresses in the Addresses (tccom4130s000) session. By means of the address, you can link time zones to the following:

- Companies
- Employees
- Warehouses
- Various business partner roles

LN uses the addresses' time zones to determine the time zone of a resource. If you do not specify the address's time zone, LN uses the time zone of the state or province, or of the country.

In addition, the address time zones are used for statistics in LN Service and in Warehouse Management.

Calendars

Calendars define the availability of resources, for example, employees, departments, and work centers, for particular activities at particular times.

You can link calendars to:

- Companies
- Employees
- Departments

- Addresses
- Various business partner roles

LN uses the most specific calendar. For example, if you link a calendar to a ship-to business partner, this calendar is used instead of the calendar that you linked to the ship-to business partner's address. The company's calendar is the default calendar for all the entities that use calendars.

To share the calendar tables between the companies of a multicompany structure, the first day of the week must be the same for all the companies. For example, you cannot share the calendars if one company defines the first day of the week as Sunday and another company as Monday.

Business Partners

5

This chapter describes:

- The business partner types
- How to specify business partner data for a sales office or purchase office
- How to use an accounting office to register separate business partner data for each financial company
- How to specify the business partner's credit limit
- How LN computes and uses the business partner open order balances and open invoice balances in a multicompany structure

A business partner is a customer or a supplier with whom you carry out business transactions. The transaction type, which can be Sales Orders, Invoices, Payments, or Shipments, is defined by the business partner's role. For example, a sold-to business partner is a party to whom you supply goods or services.

Business partner types

If you want to use pricing and invoicing functions for a party, you must define that party as a business partner. The business partners must have the roles that correspond to the transactions to be carried out.

For multicompany situations, you can define these types of business partners :

External business partners
Customers and suppliers outside your own organization.

Internal business partners
Business partners that are linked to enterprise units of the same logistic company.

You must define all the business partner roles for an internal business partner. The internal business partner will be used when, for example, goods are sold from a sales office belonging to financial company F100, to a purchase office that belongs to a different financial company (F200). Intergroup transactions will be created. A one-to-one relationship must exist between internal business partners and enterprise units. In other words, you can define one internal business partner for each enterprise unit.

Affiliated-company business partners
Logistic companies of the same multicompany structure that act as a business partner to your logistic company. You must define the sold-to and the buy-from roles for an affiliated-company business partner before you can define the enterprise modeling data in the EMM module. The affiliated company is used in:

- The (multiplant) master plan to distinguish the dependent demand from the independent demand when you analyze the order file in Enterprise Planning.
- (Multicompany) electronic data interchange (EDI) to determine the company for which an internal EDI message is intended.

You specify that a business partner is an internal business partner or an affiliated company in the Business Partners (tccom4100s000) session in Common Data.

In the menu: **Common Data > General Data > Business Partners > Business Partners (tccom4500m000)**

To define an internal business partner or an affiliated company business partner, on the **Enterprise Modeling** tab, enter this data:

Section	Description	Mandatory
Enterprise Modeling	If the business partner is an internal business partner, use these fields to link the business partner to an enterprise unit of the same logistic company.	Yes
Multi-Site	If the business partner is an affiliated company, use these fields to link the business partner to another logistic company.	Yes

If you define internal business partners and affiliated-company business partners, you can invoice an enterprise unit or a logistic company, use pricing and discounts, and maintain a balance of open invoices for the enterprise unit or logistic company. This can be required for financial accounting and local tax reporting.

Business partner data by department

In a single-logistic/multifinancial company structure, you can specify the business partner's financial data for each department.

Example

A company has sales offices in The Netherlands and in the United Kingdom, which both conduct business with the same business partner. In the different countries, you can then use a different default currency and different invoicing methods for the business partner.

The department can be a sales office or a purchase office. For internal business partners, you can also define business partner data for each work center.

You can define financial business partner data for each department for the following business partner roles:

- Invoice-to
- Pay-by
- Invoice-from
- Pay-to

This section describes how you can define invoice-to and pay-by business partner data for each sales office. The same applies to invoice-from and pay-to business partners and purchase offices.

The financial business partner data that you define for each sales office includes:

- Default currency
- Default exchange rate type
- Financial business partner group
- Default invoicing method
- Default terms of payment
- Default payment method

Note: A financial supplier/customer group can be defined for each business partner/department combination. However, for one business partner, the financial supplier/customer must be the same for all departments that belong to the same Financial company, because the related ledger accounts must be the same.

The business partner details that you define for a sales office only apply to transactions that that sales office handles. The business partner details that you define without selecting a sales office apply to do the following:

- All the sales offices for which you do not define specific details
- All transactions with the invoice-to business partner that are not linked to a sales office, such as cost invoices

Business partner data by financial company

If you define a business partner, you define the financial data in the invoice-to and invoice-from, the pay-to and the pay-by roles. For example, the financial data includes:

- The exchange rate type
- The invoicing method
- The credit control details
- The bank relation
- The terms of payment
- The financial business partner group for Accounts Payable or Accounts Receivable

Other business partner financial data consists of the open billing request amount and the open invoice balance, which LN stores separately for each sales office or purchase office.

In a multifinancial company structure, the business partner's financial data can vary by financial company. The financial data can vary, for example, in a single logistic, multifinancial company structure in which

the financial companies reside in separate countries. For example, in the various countries, the business partner can use different invoicing methods, and different bank relations. In such a situation, you can define the business partner's financial roles separately for each financial company.

LN uses the financial company's accounting office to link the specific financial business partner details to the financial company.

If you define business partner data by financial company, the following rules apply:

- You must supply default business partner financial details, that are not linked to a specific financial company. LN uses the default details for all companies for which you do not define specific details. For the default data, you must leave the **Department** field empty. The default financial details are always retrieved from the current financial company.
- LN cannot register the business partner's credit limit by department. The credit limit is part of the default business partner data.
- In a company of type **Both**, you can enter the financial business partner data without changing companies.
- To enter the financial business partner data for a company of the type **Financial**, you must work in the financial company. For the business partner department, you must select the financial company's accounting office.
- If you define the business partners in a company of the type **Logistic**, you cannot enter the default financial data in the logistic company, because in a logistic company, the tables for the financial data do not exist. You must work in the financial group company of the multicompany structure to enter the default financial business partner data. You must then leave the **Department** field empty.

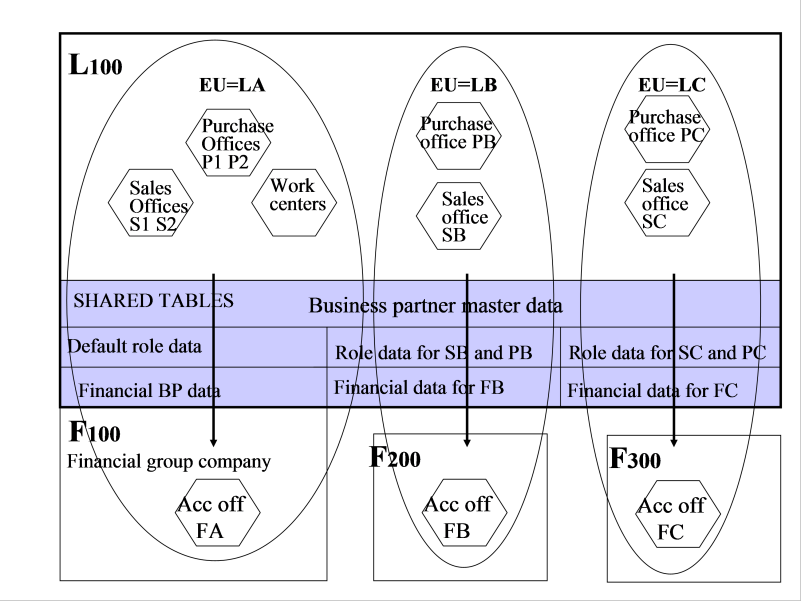
Defining business partner financial details by financial company

To define specific business partner financial details for the financial companies:

1. Set up default accounting offices for the financial companies as described in "Creating an accounting office" on page 87.
2. In the Business Partners (tccom4100s000) session, click one of the following role buttons to start the corresponding session. The procedure is similar for each role. Click:
   - **Invoice-to** to start the Invoice-to Business Partners (tccom4112s000) session.
   - **Pay-by** to start the Pay-by Business Partners (tccom4114s000) session.
   - **Invoice-from** to start the Invoice-from Business Partners (tccom4122s000) session.
   - **Pay-to** to start the Pay-to Business Partners (tccom4124s000) session.
3. Enter the default business partner details and leave the **Department** field empty.
4. Save the data and in the Business Partners (tccom4100s000) session, click the role button again.
5. In the **Department** field, select the financial company's accounting office.
6. Enter the business partner role details specific for the financial company and.
7. Repeat Steps 4 through 6 to define specific business partner role for each financial company.

Example of business partner financial details by financial company

The following figure illustrates how LN stores and retrieves the business partner data for each department in a single logistic/multifinancial company structure:



All the companies in this figure use the same database server. Therefore, the companies can share the database tables to share data.

This figure illustrates the following:

- Financial company F200 uses the business partner data that is registered for the company's accounting office FB.
- Financial company F300 uses the business partner data that is registered for accounting office FC.
- If you do not define specific business partner details for the accounting office FA, financial company F100, which is part of company 100, uses the business partner data in which the department field is empty. This data is the default data.

Note: In Financial company F100, you can select these accounting offices:

- Any department of logistic company L100
- Accounting office FA
- No accounting department.

For consistency, in this example, financial company F100 uses accounting office FA.

To define business partner financial details by financial company in the example, you must perform the following actions:

- In logistic company L100, define the invoice-to, pay-by, invoice-from, and pay-to roles three times:
  - The default business partner details, for which you leave the **Department** field empty (no department specified)
  - The data for sales office S1 or purchase office P1

  - The data for sales office S2 or purchase office P2

- Work in company FB to enter the financial business-partner data for the purchase offices and sales offices of enterprise unit LB. In the **Department** field, you must select the accounting office FB.
- Work in company FC to enter the financial business-partner data for the purchase offices and sales offices of enterprise unit LC. In the **Department** field, you must select the accounting office FC.

Business partner's credit limit

For invoice-to business partners and invoice-from business partners, you can set a credit limit. When you enter a sales order for the invoice-to business partner, LN checks that the sum of the open balances, the composed invoice balances, the balance receivable, and the amount of the new order does not exceed the credit limit.

The credit limit is part of the default invoice-to business partner’s data. How the credit limit check is applied, depends on the **Credit Limit Check per Department** setting in the Business Partner (tccom4100s000) session:

- If this check box is selected, the credit limit check applies only to the financial company, represented by its accounting department that is related to invoice-to role.
- If this check box is cleared, the credit limit check applies to all departments, in this case represented by the accounting office.

To check the credit limit, LN calculates the following:

- The total amount of the open orders of the business partner for all departments in the company.
- The total amount of the open invoice requests for the invoice-to business partner in all the financial companies linked to the departments.
- The total amount of the open invoices of the invoice-to business partner in all the financial companies linked to the departments.

Business partner's order balances and invoice balances

The Invoice-To and Invoice-From Business Partner Balance tables contain the order balances and invoice balances. In these tables, the balances are stored by department, which, through the accounting office, can also be a financial company. By storing the balances in this way, you can aggregate the data by department as well as by company.

Note: In general, the order balance is filled through the logistic company and the invoice balance through the financial company that handles the invoicing.

If you enter a sales order or a purchase order, LN increases the business partner's open order balance. If you receive a purchase invoice or create a sales invoice, LN increases the business partner's invoice balance.

This table shows the impact of each process on a business partner's open sales balance and balance receivable:

Sales orders			
Process	**Open sales balance**	**Composed invoice balance**	**Balance receivable**
Sales order entry	Increase for logistic company and sales office.	No action	No action
Release to invoicing	Decrease for logistic company and sales office.	Increase for financial company and accounting office.	No action
Sales invoice posting to Financials	No action	Decrease for financial company and accounting office.	Increase for financial company and accounting office.
Sales invoice receipt	No action	No action	Decrease for financial company and accounting office.

This table shows the impact of each process on a business partner's open purchase balance and balance receivable.

Purchase orders		
Process	**Open purchase balance**	**Balance Receivable**
Purchase order entry	Increase for logistic company and purchase office.	No action
Purchase invoice entry	No action	Increase for financial company and accounting office.
Purchase invoice approval	Decrease for logistic company and purchase office.	No action
Purchase invoice payment	No action	Decrease for financial company and accounting office.

Multicompany Financials

6

This chapter describes the multicompany aspects of the following processes in Financials, each of which are described in detail in the following sections:

- Corporate accounting. In a multifinancial company structure, you perform corporate accounting and central cash management in the financial group company. Specific requirements apply to the setup of the chart of accounts and the currency systems of the related financial companies.
- Intercompany transactions. In a multicompany environment, transactions between the logistic companies and between financial companies create the need to balance the accounts through intercompany transactions.
- Multicompany purchase invoice matching. In a multicompany structure, purchase invoice matching is possible in any financial company of the structure.
- Central payments and direct debits. In a multicompany structure, you can set up central processing of payments and direct debits for the related financial companies.
- Consolidated reporting. LN can consolidate financial information online for the financial companies that belong to one group company. This section lists the Display and Print sessions in the various Financials modules, in which you can select whether you want to consolidate the data for the financial companies.
- Central period handling. In a financial company, financial periods must be created and periodically closed. This section explains how you can control the period status for multiple companies.
- Accounting office. In a logistic company, you can group and distinguish transactions by department, such as sales offices, purchase offices and service departments. However, in a financial company, such departments do not exist. To group or distinguish transactions by department in a financial company, you can define one or several accounting offices. This section explains how you can set up and use accounting offices.
- Intergroup transactions. This section describes how you can set up and process transactions between the group companies of a multicompany structure.
- Multicompany taxation issues. This section describes multicompany tax registration and multicompany VAT processing for intra-EU transactions.
- Utilities. If you make changes to the parent and child relations of ledger accounts or to the master data setup, the open entry balance of a business partner is no longer up to date. This section lists the sessions that you can use to recover such situations in multicompany structures.

Corporate accounting

In a multifinancial company structure, you perform corporate accounting and central cash management in the financial group company, and in the reference currency of the related financial companies. Therefore, all financial companies of a multicompany structure must use the same reference currency. In addition, the financial companies of a group must have the same setup of the chart of accounts, dimensions, and financial periods.

If you use a dependent multicurrency system, you can perform corporate accounting in the group company across country borders. If you use an independent multicurrency system, the multisite structure and the structure's corporate accounting is restricted to a single-currency area or one country. For more information, refer to "Multicurrency Systems" on page 37.

Financial group company

A financial group company is a regular financial company to which a number of other financial companies are linked. You can use a financial group company to do the following:

- Process the corporate and administrative accounting.
- Accumulate the data from the group's financial companies for consolidated financial reporting.
- Perform central cash-management processes such as payments and direct debit.

The group company is usually one of the regular financial companies of the multisite structure, which, in addition, acts as the group company. You do not need to create a separate financial company to be the group company.

In LN, the group company can be of the types **Financial** or **Both**. In Infor Baan IV, the group company must be a company of type **Both**.

We recommend that you do not create a dedicated financial company because this has the following disadvantages:

- An extra company for which table sharing must be set up correctly
- An increased number of companies in the multicompany structure, which affects the performance without returning any benefit

Internal trade

Internal trade between enterprise units that are linked to different financial companies must result in financial postings. The following processes can create the financial postings:

- Intercompany transactions
- Intercompany settlements
- Intergroup transactions
- Internal material delivery

Single logistic or single financial company structure

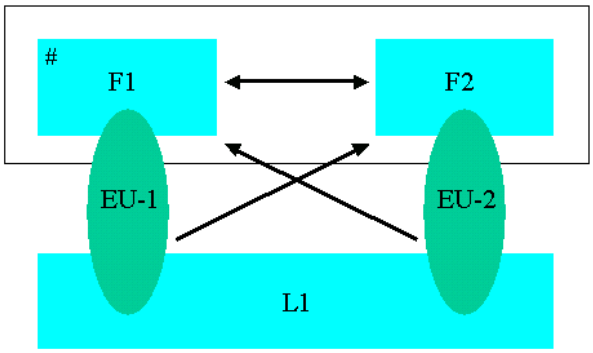
In a single logistic or single financial company structure, you can use the dimensions to register transactions between the entities of various enterprise units. A dimension is an analysis account for ledger accounts, which you can use to obtain a vertical view on the ledger accounts. You can use dimensions to subdivide ledger account information.

For example, you can transfer goods between warehouses that belong to the same enterprise unit and post the financial transactions to various dimensions of the same ledger account in one financial company.

Intercompany transactions

In a multicompany environment, transactions between the logistic companies and between financial companies create the need to balance the accounts through intercompany transactions. Intercompany transactions occur, for example, if the enterprise units of the sales office and the purchase office, work center, or warehouse involved in a logistic transaction are linked to different financial companies, or belong to different logistic companies.

Intercompany transactions are financial transactions that LN automatically creates between financial companies that belong to the same financial group. The transactions are posted to intercompany ledger accounts.



= group company

Purely financial intercompany transactions include the following:

- Single-line journal vouchers
- Cash transactions: Direct debits and automatic payments
- Manually entered cost invoices in the **Accounts Payable (ACP)** module
- Manually entered cost invoices in the **Accounts Receivable (ACR)** module

To generate these types of financial intercompany transactions, you must define the intercompany relations between the financial companies.

Financial intercompany transactions can also result from these logistic transactions:

- WIP transfers
- Inventory transfer

For WIP transfers and inventory transfers, you must define the entities as internal business partners or affiliated company business. Sales/purchase transactions between these types of business partners result in intercompany transactions if all of the following conditions are met:

- The entities are linked to different financial companies.
- You set up intercompany relations between the financial companies involved.

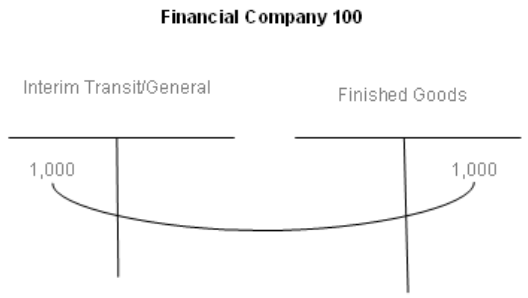
Example of intercompany transactions

This example uses the following data:

- Logistic company L100 contains the enterprise units EU100 and EU200, and two warehouses WH120 and WH220.
- EU100 is linked to financial company F100 EU200 is linked to financial company F200.
- WH120 is linked to EU100 and, through the enterprise unit, to F100.
- WH220 is linked to EU200 and, through the enterprise unit, to F200.

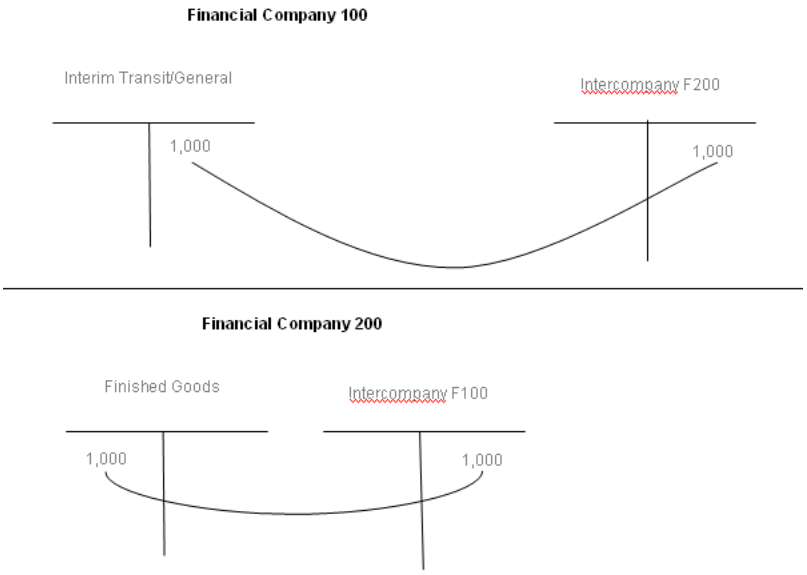
You create a warehousing order for goods transfer from WH120 to WH220.

If you issue the goods in WH120, the ERP Enterprise creates a Warehouse Issue/Issue integration transaction in logistic company L100:



If you receive the goods in WH220, the Warehouse Management (Transfer Manual)/Receipt integration transaction is triggered in logistic company L200: Debit: Inventory in F200. Credit: Inventory In Transit in F100.

If you finalize the batch in the financial company F200 of the receiving warehouse, these transactions result in the following intercompany transactions between the financial companies F100 and F200:



Note: Intercompany transactions never result from invoices that are processed in **Invoicing**. If the financial companies reside on separate servers, you must use data replication or distributed transaction processing to solve this problem. For more information, refer to "Multicompany Data Sharing" on page 167.

Set up intercompany transactions

In the Company Parameter (tfgld0103s000) session you must define to which group company the financial company belongs. You can only enter another company number for the group company number if the Financial Companies table (tfgld004) is shared. For details about data sharing, refer to "Multicompany Data Sharing" on page 167.

You must specify the financial companies and the transaction types for which you want LN to generate intercompany transactions.

To set up intercompany transactions:

1. Run the Intercompany Relations (tfgld0515m000) session.

   In the Intercompany Relations (tfgld0515m000) session, specify for each combination of source company and destination company the ledger accounts to which the intercompany transactions must be posted for each transaction type. The ledger account types must be of the **Intercompany type**. You can enter a related transaction type that is used to post the transaction in the target company.

   In the menu: **Financials > Master Data > General Ledger > Intercompany Transaction Processing > Intercompany Relations (tfgld0515m000)**

   The overview session shows transaction types of which the transactions can create intercompany transactions. Use the details session to modify or To create new intercompany relations or modify existing ones, use the details session.

   The following table lists the relevant fields of the Intercompany Relations (tfgld0515m000) session:

Field	Description	Mandatory
Source Company	The company in which the financial transaction is created	Yes
Target Company	The target financial company for which the financial transaction is intended.	Yes
Transaction Type	The transaction types for the financial transactions in the source company and in the target company. For intercompany transactions, the transaction category must be **Journal Voucher** or **Cash**. The transaction category must be the same in the source company and the target company.	Yes
Ledger Account	The ledger accounts in source company and in the target company to which the transaction will be posted. The ledger accounts must be of the **Intercompany** type.	Yes

Tip: Create a specific related transaction type for Intercompany transactions. Then you can always recognize the transactions created in a financial company through Intercompany transactions.

2 Run the Business Partners (tccom4100s000) session.

Only for WIP transfers and inventory transfers, define the entities involved as business partners in the Business Partners (tccom4100s000) session. You must select the **Internal Business Partner** check box and the **Link to Enterprise Unit** check box, and specify the enterprise unit.

3 Set up internal trade relationships.

Only for WIP transfers and inventory transfers, you can set up internal trade relationships between the entities involved in the **Enterprise Modeling Management (EMM)** module to specify default values for pricing, invoicing, and invoice currency. Refer to "Enterprise Modeling Management" on page 51 for details about intercompany relations.

Next, you must set up the financial integration.

4 Run the Mapping Scheme (tfgld4573m000) session.

The integration mapping scheme defines to which ledger accounts the integration transactions are posted and which mapping elements are used to find the appropriate dimensions.

In the menu: **Financials > General Ledger > Integration Transaction Processing > Mapping Scheme (tfgld4573m000)**

You can enter a specific logistic company to which the mapping scheme applies. Transactions that originate in this logistic company are posted according to the defined integration mapping scheme. If you do not enter a logistic company, the mapping scheme applies to transactions from all the logistic companies in the multicompany structure. In this way, you can set up a central mapping scheme that the logistic companies share.

You can define the dimension mapping in the same way as you define the ledger account mapping.

For details, refer to *Infor LN Financials - User's Guide for Integration Mapping (U8936* US)* or refer to the online Help.

Posting multicompany integration transactions

Transactions from logistic companies must be posted to non-finalized transactions in the general ledger through the Post Integration Transactions (tfgld4282m000) session.

In the menu: **Financials > General Ledger > Integration Transaction Processing > Post Integration Transactions (tfgld4282m000)**

Logistic company

In a multicompany set up, be sure to select the correct range of originating logistic companies and financial companies. For example, if the logistic transactions originates from logistic company 200, and you post the transactions in company 201 because that is your financial company, you must select company 200 in the **Logistic Company** field. Otherwise, no integration transaction will be created.

Error log

If errors occur during the mapping or posting, you can view the error log and then solve the errors. Start the Integration Transactions (tfgld4582m000) session and on the **Specific** menu, click **Integration Transactions Error Log**. The Print Integration Transactions Error Log (tfgld4484m000) session starts.

Financial period

LN always posts an integration transaction to the same fiscal period in the companies in which the debit transaction and the credit transaction are posted. If a transaction with a logistical origin must be posted to two different financial companies, the transaction is posted to the same fiscal period in both companies. The same applies to reporting periods.

If the period statuses in the companies differ during the posting of the integration transactions and in one of the companies the period is already **Closed**, for integration transactions, LN determines the period as described in the next section.

If the financial period is Closed

If the period is **Closed**, LN tries to post the transaction according to the **Closed Period Handling** option that applies to the integration transaction.

In the Integration Parameters (tfgld4150s000) session, you can select the default **Closed Period Handling** option. In the Period Handling by Integration Document Type (tfgld4579m000) session, you can select the closed period handling option for specific integration document types.

You can select the following **Closed Period Handling** options:

- Post to current period. LN posts the transaction to the current financial period.
- Post to next open period. LN posts the transaction to the next open period.

Exception handling

In the Requested Exceptions for Integration Transactions (tfgld4585m000) session, enter a request to post integration transactions to specific financial periods of which the status is **Closed**.

After an authorized user approves the request, the transaction can be logged and posted. You do not need to set a **Closed** period to **Open**. However, the corresponding **GLD** period must be **Open** at the time when you post the integration transaction. If required, you can manually set the **GLD** period to **Open** in the Period Status (tfgld0107m000) session.

For more information, refer to *Infor10 ERP Enterprise Financials - User's Guide for Integration Mapping (U8936* US)*.

Central finalization

LN creates financial transaction batches in all financial companies involved. To enable corporate monitoring and handling of the financial batches, you can use several sessions, which include the following.

Non-finalized transactions

In the menu: **Financials > General Ledger > General Ledger Processing > Finalization > Print Nonfinalized Transactions (tfgld1401m000)**

Use this session to print non-finalized transactions for multiple financial companies.

Global finalization

In the menu: **Financials > General Ledger > General Ledger Processing > Finalization > Global Selection of Batches for Finalization (tfgld1210m000)**

Use this session to select a range of batches for finalization. For multiple financial companies, this session allows you to finalize at once all batches in the fiscal period or the year you want to close.

If the **Default Finalization by Batch** field in the Company Parameters (tfgld0103s000) session is set to **Individual Users**, only a Finalization Administrator can finalize financial batches of other LN users.

Note: A finalization report is printed in the financial company in which the transaction is created. In the target company, no financial report will be available.

Error log

If errors occur during the processing, you can use the Error Log (tfgld1106m000) session to view the error log and then solve the errors.

In the menu: **Financials > General Ledger > General Ledger Processing > Finalization > Error Log (tfgld1106m000)**

Use this session to view errors of multiple companies that occur while you process the transactions. The messages listed are triggered by background processes during, or after, you run the Transactions (tfgld1101m000) session.

Multicompany purchase invoice matching

In a multicompany structure in LN, purchase invoice matching is possible in any financial company of the structure, provided that the companies share the matching tables (tfacp240, tfacp245, tfacp250, and tfacp251) for this purpose.

Multicompany purchase invoice matching can be used to support:

- Shared service centers for Accounts Payable for central handling of purchase invoice entry, invoice matching and payment for multiple financial companies.
- VAT registrations in multiple EU countries. In a multicompany structure, a dedicated financial company should be created for each foreign VAT registration. Usually, the purchase offices in which the purchase orders are entered are not linked to such financial companies. If the purchase invoice matching can be performed in the 'VAT registration companies', the costs of the purchase order are automatically charged to the company of the purchase office. If this matching scenario is used, it is no longer necessary to create an internal invoice between the two financial companies.

Purchase invoice matching setup

To allow for multicompany purchase invoice matching, the matching tables (tfacp240, tfacp245, tfacp250, and tfacp251) must be shared first. Next, purchase invoice matching is modeled in the Accounts Payable Parameters (tfacp0100s000) session.

The options are:

Field	Description
Single Company	The purchase invoice can only be matched to orders from purchase offices linked to the financial company in which the invoice is registered and matched.
Multi Company	The invoice can be matched to orders from all the financial companies that share the purchase order data and the warehouse receipt data required for the invoice matching.
Not Applicable	Purchase invoice matching is not allowed in the financial company. If you select this option, multicompany purchase invoice matching must be selected for another financial company of the multicompany structure. LN checks for this option during invoice entry. If this option is selected, no purchase order related invoices can be entered. Invoices that were entered before you selected the Not Applicable option can still be matched.

Posting principles

The posting principles that apply to this method of purchase invoice matching are as follows:

- The costs directly related to the purchase order and/or inventory are posted in the financial company of the purchase office. Some examples are the price variance, the FTP result, and additional costs posted at matching.
- The results from the open entry are posted in the financial company in which the purchase invoice is registered and matched. Some examples are the currency result, the payment discount, the late payment surcharge, the payment difference.

Multicompany purchase invoice processing

In a multicompany structure, the following rules apply to purchase invoice matching.

Order-related purchase invoices

The following applies to order-related purchase invoices including self-billed invoices:

- A purchase invoice can be entered in any financial company that shares the required tables with the financial company of the purchase office. During invoice matching, LN offers only those orders and receipts that are linked to the financial company in which you match the invoice.
- By default, additional costs posted during matching are posted in the financial company of the purchase office. If these costs must be posted in the financial company in which you match the invoice, you can enter the company number in the **Target Company** field in the Matched Purchase Invoice/Statement Line Transactions (tfacp1133s000) session. VAT is considered to be related to the invoice and is therefore posted in the financial company in which you match the invoice. An exception is non-refundable tax (expense tax), which is considered as a cost related to the order and is posted in the financial company of the purchase office.
- Cost items are considered to be related to the purchase order and are posted in the financial company of the purchase office. The expense account for cost items can be specified at the order entry or at purchase invoice entry. In the latter case, the costs are first posted to an interim account in the financial company of the purchase office. In **Accounts Payable**, the costs can be posted to specific expense accounts. In the financial company of the purchase office, the interim account must then be reversed. By default, the costs are posted to the actual expense accounts for the financial company of the purchase office. You can change the company number in the Matched Purchase Invoice/Statement Line Transactions (tfacp1133s000) session.

Cost invoices

- Cost invoices can be registered in any financial company. In the transaction details, you can associate a financial company with the cost account. This triggers the generation of an intercompany entry to transfer the costs to the correct financial company.

Central payments and direct debits in a multicompany structure

In a multifinancial company structure, you can centrally perform automatic payments and direct debits. The invoices will be selected and processed in the group company.

In the menu: **Financials > Cash Management > Master Data > Master Data > CMG Parameters (tfcmg0100s000)**

The following table lists the relevant fields of the CMG Parameters (tfcmg0100s000) session:

Field	Description	Mandatory
Payments by Company Group	If this check box is selected, the payments to be made are collected for all companies that belong to the group, defined in the Financial Companies by Group Company (tfgld0104m000) session. You can create payments either separately in each company, or collectively for all companies in a group. In the latter case, you can create the payments in the group company.	Yes
Direct Debits by Company Group	If this check box is selected, the customer receipts that still must be paid are collected for all companies that belong to the group, defined in the Financial Companies by Group Company (tfgld0104m000) session. You can create customer receipts either separately in each company, or collectively for all companies in a group. In the latter case, the customer receipts are registered in the group company.	Yes

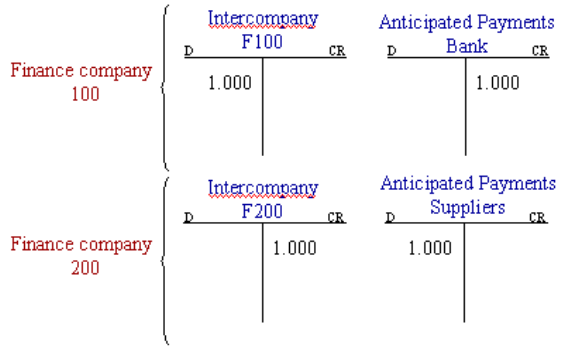
For each financial company in the group company, you must specify whether the invoices of that financial company will be paid/direct debited centrally.

If you select the **Payments or Direct Debits by Group Company** check box in the CMG Parameter (tfcmg0100s000) session of a financial company, you cannot select and process the invoices for automatic payments or direct debits in the financial company in which the open entry was created.

In the group company, you can select the invoices for payment or the direct debits for all the financial companies that belong to that group if the **Payments or Direct Debits by Group Company** check box is selected in the CMG Parameter (tfcmg0100s000) session in the individual financial companies.

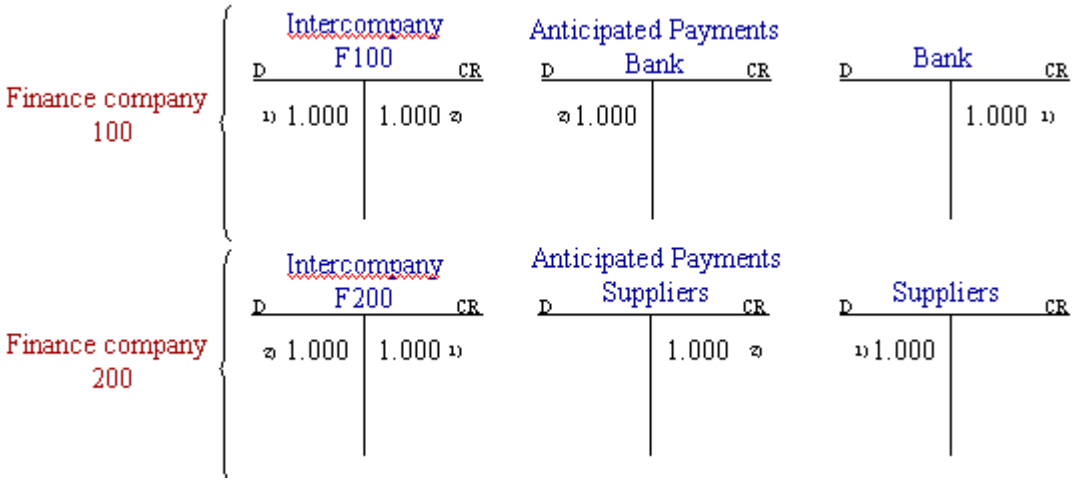
Example of central payments and direct debits

If you finalize the anticipated payment or direct debits transaction batch in the financial company F100, these transactions result in the following intercompany transactions between the financial companies F100 and F200.



In the group company F100, you must reconcile the bank statement and the anticipated payment or direct debits batch.

If you finalize the bank statement transaction batch in the financial company F100, these transactions result in the following intercompany transactions between the financial companies F100 and F200:



Consolidated reporting

LN can consolidate financial information online for the financial companies that belong to one group company. In display and print sessions throughout Financials, you can indicate that you want to consolidate the data for the financial companies.

In the Financials modules, various inquiry and report sessions support multicompany reporting. The following sections list the appropriate sessions in each Financials module.

- **General Ledger**
  - Ledger History (tfgld3501s000)
  - Print Trial Balance (tfgld3402m000)

  - Print Extended Trial Balance (tfgld3411m000)
  - Print Non-Finalized Transactions (tfgld1401m000)
  - Print Finalized Transaction by Data (tfcmg1440m000)
  - Print Error Log (tfgld1405m000)
  - Global Selection of Batches for Finalization (tfgld1210m000)
  - Reprint Finalization Run (tfgld1402m000)
- **Accounts Receivable**
  - Business Partner Totals (tfacr2533m000)
  - Invoice-to Business Partner Aging Summary (tfacr2511m000)
  - Print Open Entries (tfacr2421m000)
  - Print Invoice-to Business Partner's Balances (tfacr2424m000)
  - Print Invoice-to Business Partner's Total Balances by Company (tfacr2434m000)
  - Print Aging Analysis by Invoice-to Business Partner (tfacr2420m000)
  - Print Invoice-to Business Partner Aging Summary (tfacr2411m000)
  - Print Invoice-to Business Partner's Finalized Transactions (tfacr2416m000)
  - Print Specifications Delivered, Not Yet Invoiced (tfacr1432m000)
- **Account Payable**
  - Business Partner Totals (tfacp2533m000)
  - Invoice-from Business Partner Aging Summary (tfacp3525m000)
  - Print Open Entries (tfacp2421m000)
  - Print Invoice-from Business Partner's Balances (tfacp2424m000)
  - Print Invoice-from Business Partner's Total Balances by Company (tfacp2434m000)
  - Print Aging Analysis by Invoice-from Business Partner (tfacp2420m000)
  - Print Invoice-from Business Partner's Aging Summary (tfacp3425m000)
  - Print Invoice-from Business Partner's Finalized Transactions (tfacp2416m000)

Financial Statements (FST)

You can create multiple company financial statements for all the financial companies belonging to one financial group. In the Statement Ledger/ Dimension Accounts (tffst1121s000) session, you define the financial companies for which the statement is valid.

In the Export the Financial Values (tffst1204m000) session, you can export financial data to the interim Financial Values (tffst305) table of the FST module. You can export the actual data (general ledger history) and the budget data for all financial companies belonging to one group company. The general ledger history tables do not need to be shared for this situation.

In the Process Financial Statement Values (tffst1205m000) session, you can process the data to the Financial Statements Value (tffst300) table of the FST module. You can process all data from the interim Financial Values table for all companies that belong to one group company.

Central period handling

In a financial company, financial periods must be created and periodically closed. The period table in a multicompany structure must be linked, but the statuses of periods will be maintained in each financial company. You can use the Cross Company Period Status (tfgld0207m000) session to create the period status for multiple companies.

To make the period handling in a multicompany structure easy, you can create the period statuses in the central financial company in the Cross Company Period Status (tfgld0207m000) session.

In the menu: **Financials > General Ledger > Periodic Processing > Period Handling > Cross Company Period Status (tfgld0207m000)**

For an overview of the period statuses in the various financial companies, you can use the Report Print Period Status by Year (tfgld0407m000) session.

You can also maintain the period statuses in a multicompany structure from the central company.

In the menu: **Financials > General Ledger > Periodic Processing > Period Handling > Close Periods (tfgld1206m000)**

Accounting office

In a logistic company, you can group and distinguish transactions by department, such as sales offices, purchase offices and service departments. However, in a financial company, such departments do not exist. To group or distinguish transactions by department in a financial company, you can define one or several accounting offices. The type of data that you can group by department is mainly:

- Manually entered sales invoices
- Trade notes
- Business partner financial data, such as the bank relation, the payment method, and the control accounts and other ledger accounts defined for the financial business partner groups in Accounts Receivable and Accounts Payable.

The accounting office must be a department of which the financial company is the operational company. In a company of type **Financial**, the accounting office must be of type **Accounting Office**. In a company of type **Both**, the accounting office can be of type **Accounting Office**, **Sales Office**, **Purchase Office**, or **Service department**.

The accounting office determines, among other things, the control accounts for the various transactions in Accounts Receivable and Accounts Payable. Because the control accounts must not be changed, once you have selected an accounting office for a financial company and saved the details, you cannot change the accounting office. This also applies if you select no accounting office for the financial

company and in this way, use the default business partner financial data. You cannot select an accounting office for the financial company at a later stage.

If you want to group manually entered sales invoices, you can create multiple accounting departments for that purpose. In Central Invoicing, if you manually enter invoices in the Manual Sales Invoice Data (cisli2120s000) session, you must enter a department for the invoice. The department is one of the aggregation criteria. If you define multiple accounting offices for the company, you can select one of these. By default, LN uses the company's default accounting office to post the invoices.

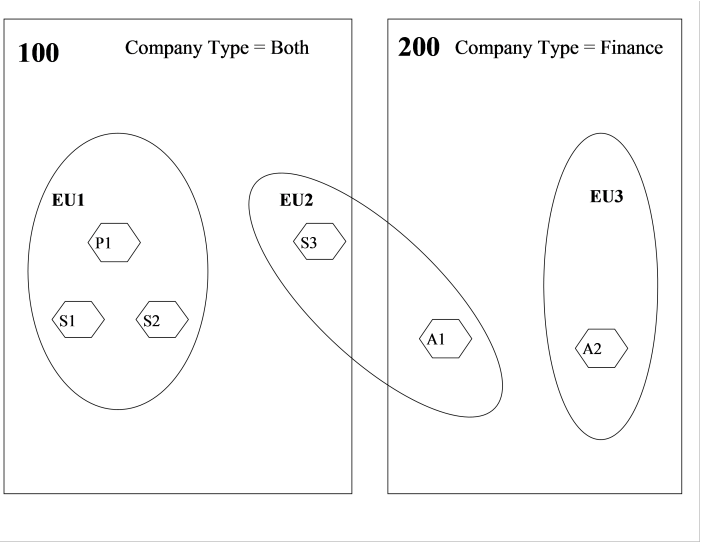
For details on how to define and register financial business partner data by financial company, refer to "Business partner data by financial company" on page 67.

Creating an accounting office

To create an accounting office:

1. Work in the financial company for which you create the accounting office. The company can be of type **Financial** or **Both**. In this way, the financial company is the operational company of the accounting office.
2. Create the accounting offices in the Departments (tcmcs0565m000) session and for each accounting office, select an enterprise unit that is linked to the financial company.
3. In the Company Parameters (tfgld0103s000) session, enter the company's default accounting office in the **Accounting Department** field.

Example of accounting offices



In the figure above, company 100 is of type **Both** and company 200 is of type **Financial**. In company 100, the logistic departments purchase office P1 and sales offices S1 and S2 are used to distinguish the financial data. Transactions created in sales office S3 are posted in financial company 200.

Financial company 200 has two accounting offices, A1 and A2. For manually entered sales invoices, you can select department A1 or A2.

The following table lists, for each department, the operational company and the financial company to which transactions created in the department are posted.

Department	Operational company	Enterprise unit	Financial company
P1	100	EU1	100
S1, S2	100	EU1	100
S3	100	EU2	200
A1	200	EU2	200
A2	200	EU3	200

Utilities

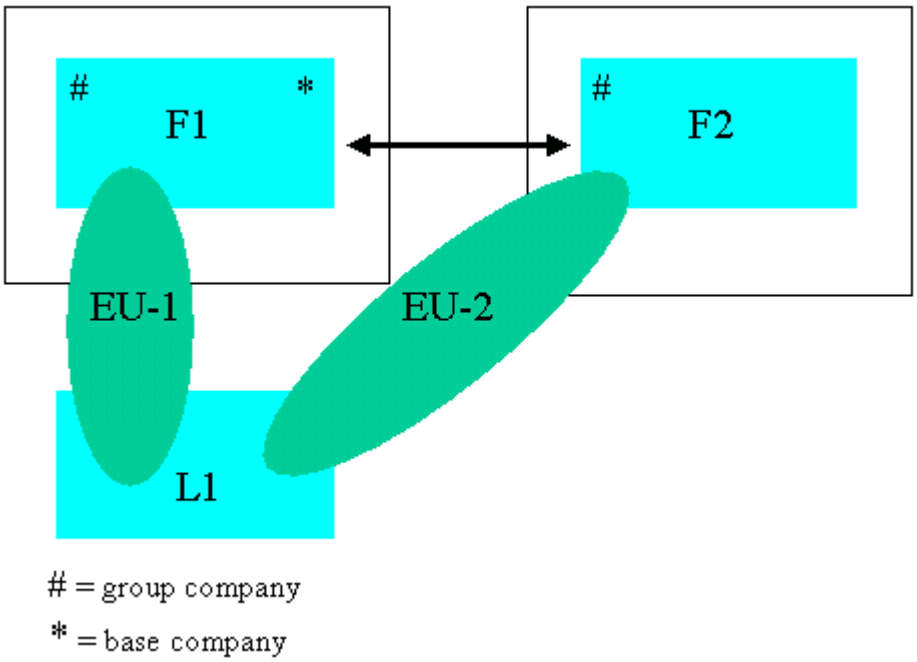
If you change the parent and child relations of ledger accounts and/or dimensions, the history of the transactions already available in Financials is no longer synchronized with the actual relations. In the same way, the master data setup, for example, the parent/child relations, of business partners can be changed when LN is operational. As a result, the open entry balance of a business partner is no longer up to date.

To recover such situations, LN provides various sessions, which you can also use for multiple companies:

- Rebuild Ledger History (tfgld3201m000)
- Rebuild Dimension History (tfgld3202m000)
- Rebuild Opening Balance/History from Transactions (tfgld3203m000)
- Rebuild Ledger/Dimension History of Period (tfgld3206m000)
- Recalculate Business Partner Balances (tfacr2245m000)
- Recalculate Business Partner Balances (tfacp2245m000)

Intergroup transactions

Intergroup transactions occur only in multicompany structures with more than one financial group company:



One of the group companies must be defined as the base company. If transactions take place between companies belonging to two different groups, the transactions are recorded temporarily in the base company. These transactions are generated as nonfinalized transactions in the destination company. The base company is defined in the Group Company Parameter (tfgld0101s000) session.

Purely financial intergroup transactions include the following:

- Single-line journal vouchers in which the debit and credit transaction lines are created for financial companies that belong to different groups
- Cash transactions, if the type of transaction is journal and, on the transaction line, a financial company belonging to a different group is selected
- Manually entered cost invoices in the **Accounts Payable (ACP)** module, in which the costs are related for a financial company belonging to a different group
- Manually entered cost invoices in the **Accounts Receivable (ACR)** module

Financial intercompany transactions can also result from the following logistic transactions:

- WIP transactions
- Inventory transfer

For WIP transfers and inventory transfers, you must define the entities as internal business partners or affiliated company business partners. Sales/purchase transactions between such business partners result in intercompany transactions if both the following conditions are met:

- The entities are linked to different financial companies
- You set up intercompany relations between the financial companies involved.

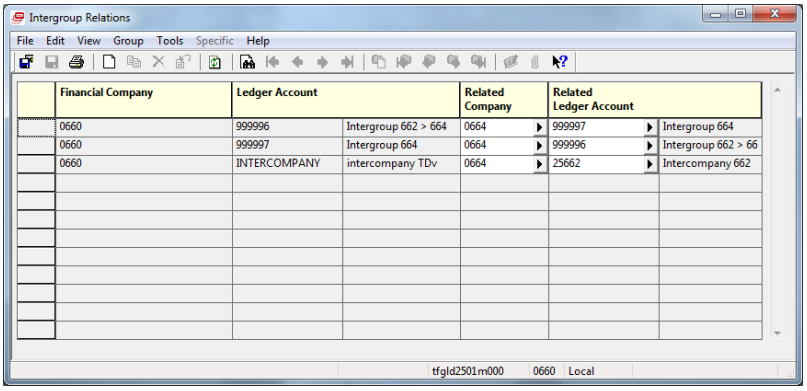
Set up intergroup transactions

To set up intergroup transactions:

1 In the Group Company Parameters (tfgld0101s000) session, define to which base company the group company belongs. You can only enter another company number if the company table is shared. (For details about data sharing refer to "Multicompany Data Sharing" on page 167.

2 In the Intergroup Relations (tfgld2501m000) session, specify the financial companies for which you want LN to generate intergroup transactions.

Financials > General Ledger > Intercompany Transaction Processing > Intergroup Relations (tfgld2501m000)



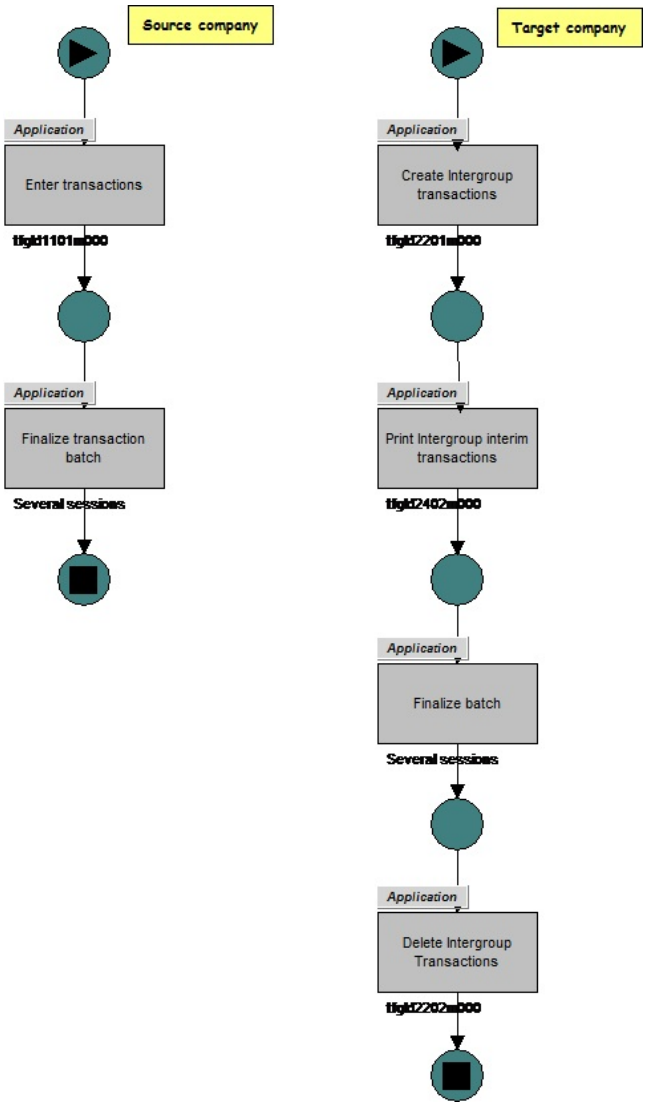
The Intergroup Relations (tfgld2501m000) session comprises these fields:

Field	Description	Mand.
Company Number	The company number is the company in which the financial transaction is created.	Yes
Ledger Account	The ledger account of the other group company for which the transactions will be created. The ledger account must be of the type Intercompany and is created in the current company.	Yes
Related Company	The company number of the company for which the transactions are intended.	Yes
Related Ledger Acc.	The ledger account of the current company from which the transactions are created. The ledger account must be of the type Intercompany and is created in the related company.	Yes

You can print the defined intergroup relations with the Print Intergroup Relations (tfgld2401m000) session.

Processing intergroup transactions

The following diagram shows the intergroup transactions processing procedure:



If intergroup transactions are entered in one group company, the transactions must be imported in the other group company, with the Post Intergroup Transactions (tfgld2201m000) session. Subsequently, the transactions are available in the general ledger of the target company. After the intergroup transactions are finalized in the target company, the interim table of intergroup transactions is deleted. You can import ('create') the intergroup transactions only once.

Example of intergroup transactions

The following example describes the steps to create an intergroup transaction. Marketing costs are allocated from the holding company to an affiliated company.

1 Create the transaction.

Create the transaction in the source company in the Transactions (tfgld1101m000) session.

Financials > General Ledger > General Ledger Processing > Journal Entry > Transactions (tfgld1101m000)

If you select a **Journal Voucher** transaction type, the Journal Vouchers (tfgld1103s000) session starts.

2 Specify the target company and ledger account.

In the Journal Vouchers (tfgld1103s000) session, on the **Entry Amount** tab, you must enter the intergroup ledger account of the company for which you want to create the transaction.

The Journal Vouchers (tfgld1103s000) session includes these fields:

Field	Description	Mandatory
Target Company	The company number is the company where the financial transaction will be created.	Yes
Ledger Account	The Intergroup ledger account of the target company, that is defined in the source company.	Yes

When you save the transaction line, the Intergroup Transactions (tfgld1202s000) session automatically starts.

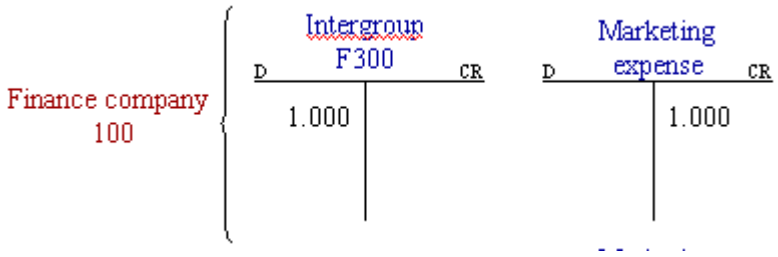
The target company number is automatically entered because of the intergroup ledger account used in the source company. If you zoom on the **Target Ledger Account (Not IC)** field, the ledger accounts of the target company are listed. You can split the total amount over several target ledger account, but you cannot change the **Debit/Credit** indicator.

Note that you only must enter a single transaction line.

Save the Intergroup Transactions (tfgld1202s000) session and complete the transaction in the source company.

3 Finalize the transaction batch.

The financial result in the source company is the following:



4 Print the intergroup transaction status. This step is optional.

In both companies, the source company and the target company, you can print the intergroup transactions with the Print Intergroup Interim Transactions (tfgld2402m000) session.

Financials > General Ledger > Intercompany Transaction Processing > Print Intergroup Interim Transactions (tfgld2402m000)

In the **Transaction Status** field, select the transactions to be printed:

Field	Description	Mandatory
Transaction Status	You can choose between: • Transactions Entered • Posted in Source Company • Created in Target Company • All Transaction Types	Yes

5 Create the intergroup transactions.

The intergroup transactions prepared in the source company must be created (imported) in the target company. You can only create the interim intergroup transactions from the target company. You must finalize the intergroup transactions in the source company.

Financials > General Ledger > Intercompany Transaction Processing > Post Intergroup Transactions (tfgld2201m000)

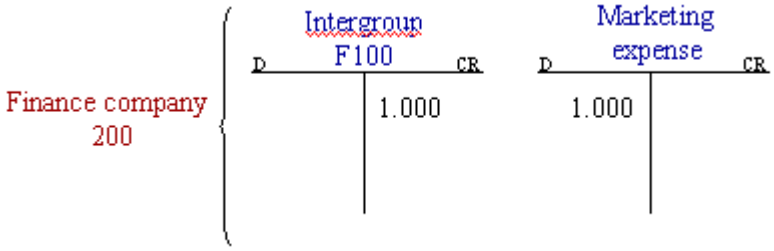
In the Post Intergroup Transactions (tfgld2201m000) session, these fields are important:

Field	Description	Mand.
Transaction Type	The transaction type must be of the type Journal Voucher.	Yes
Use Original Currency Rates	If you select this check box the currency rates of the source company will be used. If you do not select this check box, the currency rates of the destination company will be used.	Yes

Tip: Define a specific transaction type for intergroup transactions.

If you create (import) the intergroup transactions, a non-modifiable transaction batch is created. The status of the intergroup transactions has also changed. To check this, print the intergroup interim transactions.

The financial result in the target company is as follows:



6 Delete the intergroup transactions. This step is optional.

After you create and finalize the intergroup transactions in the destination company, you can delete the intergroup transactions in the Delete Intergroup Transactions (tfgld2202m000) session.

Financials > General Ledger > Utilities > Archive and Delete > Delete Intergroup Transactions (tfgld2202m000)

Multicompany Taxation

7

Tax reporting is part of the financial accounting and is restricted to one country. Therefore, the LN tax handling in a multicompany structure is very similar to the tax handling in a single company environment. This chapter describes the multicompany aspects of LN tax handing. This chapter describes the following issues:

- Multicompany tax registration
- Multicompany VAT processing for intra-EU transactions
- Tax registration in a foreign country

Multicompany tax registration

For tax registration, you define the various tax details for each country in the Taxation module. The tax details of each country include information such as:

- The tax type: **Normal**, **Shifted**, or tax **On Payments**
- The tax authority
- Whether the tax is expense purchase tax
- The tax rates over various amounts, and the rate effective dates

In the General Ledger (GLD) module of Financials, you specify the ledger accounts for the tax amounts separately for each financial company. In this way, LN can post the tax amounts calculated for a tax code to different ledger accounts in the individual financial companies, for example, in a single logistic, multifinancial company structure.

Whether the companies share the various tax code tables of Common Data and the general ledger tables of Financials, depends on the type of multicompany structure and the requirements of the organization.

Multicompany VAT processing for intra-EU transactions

The goods transfer between the countries of the European Union (EU) requires a complex value-added tax (VAT) handling. Depending on the countries in which the goods are issued, delivered, and invoiced, various VAT types apply to the transactions. LN applies the VAT rules for intra-EU transactions in the following cases:

- If the business partners involved are legal persons, in other words, if the business partners have a tax number
- If the transactions are posted to financial companies that reside in the EU

The VAT rules for intra-EU transactions apply to all transaction types, that is:

- Generated intercompany settlements between financial companies which result from goods transfers between the enterprise units of a logistic company. The enterprise units must be defined as internal business partners.
- Sales transactions and purchase transactions between the logistic companies of a multilogistic company structure. In each logistic company, the other logistic companies must be defined as affiliated-company business partners
- Sales transactions and purchase transactions between your company and external business partners.

VAT types

In EU countries, the following types of VAT rates are imposed:

Domestic VAT
The VAT that is imposed on transactions within an EU country.

Intercommunity transactions (ICT) sales VAT
The VAT that is imposed on sales transactions between EU countries.

Intercommunity transactions (ICT) purchase VAT
The VAT that is imposed on purchase transactions between EU countries.

Import VAT
The VAT that is imposed on goods imported into the EU.

Export VAT
The VAT that is imposed on goods exported from the EU.

For each VAT type, you can use the Tax Handling (tctax0138m000) session to enter the tax codes (VAT codes) and the corresponding VAT rates for each combination of the following:

- Financial company
- Country
- Item (optional)

Taxation > Master Data > Value Added Tax > Tax Handling (tctax0138m000)

In a multifinancial company setup, in each financial company, you must enter the tax codes for the EU Tax Handling for all the countries between which intercompany transactions can take place, not only the financial company's home country.

If a VAT code applies to a specific item, you must specify the item. LN applies the VAT codes with an empty **Item** field to all items for which you do not specify specific VAT codes.

Tax numbers

Legal businesses that are taxable in the EU are identified by a tax number. If you define a business partner in an EU country, you must enter the business partner's tax number in the Tax Number by Business Partner (tctax4100m000) session.

Business partners that do not have a tax number are considered private persons instead of commercial businesses. If no tax number is available, LN uses the tax code for Domestic VAT.

Taxation > Master Data > General Tax Data > Tax Handling (tctax0138m000)

Supply of goods with installation or assembly

Various rules apply to goods that must be assembled or installed on arrival. For example, these are components required to repair, improve, or expand already built or installed goods. These types of transactions typically occur in a project or service environment. Therefore, LN uses the ship-to address to determine the country for transactions that you enter in Project and Service.

Tax registration in a foreign country

In some situations, transactions must be reported for taxation in a foreign country. Typically, this can happen if service items are delivered directly from the supplier to the customer's site at which the service activities are performed, and if spare parts that were not used are returned directly from the service location to the suppler.

To report tax in a country other than the company's home country, you must have a registered tax number in the other country. This is required in the following cases:

- You perform transactions that are taxable in the destination country.
- You have branch offices in some countries that belong to legal entities in other countries.

Transactions taxable in the destination country

Transactions can be taxable in the destination country:

- Under the distance-selling rules, sales transactions and service transactions with customers in EU countries if the related invoice amount exceeds the defined thresholds.
- If the delivered goods are installed in the destination country.

Transactions taxable in the destination country often are 'supply-and-install' projects. Because projects are characterized by being unique, LN does not support a tax country other than the home country for sales schedules and purchase schedules, which typically are predictable and repetitive.

Transactions taxable in foreign countries can be:

- Sales orders
- Service orders
- Purchase orders and invoices related to direct delivery sales orders
- Sales invoices, including manual invoices, credit notes, and sales invoices for service orders

Note: For transactions taxable in foreign countries, you must create a separate financial company for tax registration in the foreign country.

Departments

To support tax registration and reporting in foreign countries, two types of department are linked to the transactions:

Administrative department
The department that creates and maintains the order, and which determines details such as order number series, price book, rates, and various default values for the orders. The administrative department is a sales office, a purchase office, or a service department.

Financial department
The department that determines the financial company to which the transaction must be posted, and which is responsible for the tax declaration in the tax country of the order. The financial company's home country must be the tax country of the order. The financial department is an accounting office of the financial company.

Note: If the financial company of the administrative department has a tax number in the tax country of the order, the financial department is the same department as the administrative department.

The financial data of the order

LN retrieves the financial details of an order or invoice such as the currency rates, various tolerances, and tax details, from the financial company of the financial department on the order header. By default, the tax country is the home country of the financial company of the financial department.

Internal trade relationships

For issues and receipts in **Warehouse Management**, LN checks the internal trade relationship between the warehouse and the financial department of the order to determine the invoicing type of the internal trade. If the order involves a legal entity in a foreign country, the financial department of the order is an accounting office.

To support tax registration in foreign countries in a multicompany environment, you can define relationships between the following types of entities:

- Warehouse and accounting office
- Accounting office and sales office
- Purchase office and accounting office
- Accounting office and accounting office

Tax registration in a foreign country - general rules

For tax registration in a foreign country, these rules apply:

- A financial company is the smallest entity that can have a unique tax number. For every tax registration in a foreign country, you must define a financial company.
- The financial postings of an order or invoice are made in the financial company that has a tax number in the tax country of the order.
- For the integration transaction mapping, the administrative department of orders and invoices is available as integration element. In the financial company of the tax country, you can use this integration element to distinguish the integration transactions by administrative department.
- The details of order-related and invoice-related financial integration transactions include the financial department.
- No financial transactions are automatically generated between the financial companies of the administrative department and the financial department of an order.
- For goods transfer, LN bases the generation of internal invoices between, for example, the warehouse and the sales office, on the goods transfer relationship between the warehouse and the financial department of the order.
- If your organization's legal address for matters related to business in the tax country differs from the address of the financial company in the tax country, you can enter the legal address in the Financial Departments (tctax4110m000) session.

Taxation > Master Data > General Tax Data > Financial Departments (tctax4110m000)

Tax registration in a foreign country - setup

To set up tax registration in tax countries other than the company's home country:

1 In the Tax Handling Parameters (tctax0100m000) session, select the **Use Tax Numbers of other Financial Companies** check box.

Taxation > Master Data > General Tax Data > Tax Parameters (tctax0100m000)

The Tax Parameters (tctax0100m000) session includes the following fields:

Field	Description	Default Value
Use Tax Numbers of other Financial Companies	If this check box is selected, LN can change the tax country of a transaction and replace your tax number on, for example, order acknowledgments and sales invoices, the with the tax number of the financial company in the new tax country. If this check box is cleared, LN always retrieves your tax number from the financial company in the country of the sales office, purchase office, or service department of the order.	No
Allow Simplified Triangulation between own Entities	If this check box is selected, LN does not apply the rules for tax registration in foreign countries to goods transfer between enterprise units of your company. If you select the **Use Tax Numbers of other Financial Companies** check box, you can select this check box. If you apply the simplified triangular trade procedure, you do not require a tax number in the destination country for goods transfer between enterprise units in different EU countries that represent sites of your own organization.	No

In LN, the simplified triangular trade procedure is the consignment of goods directly from the vendor to the buyer. For triangular trade transactions between countries of the European union, this method is frequently used if the intermediary party between the vendor and the buyer uses a purchase order linked to a sales order.

2 Create a financial company in each country in which you must report tax. The company's home country must be the tax country and the company's local currency must be the currency used for tax reports in the tax country.

In each financial company, define the following:

- In the General Company Data (tccom0102s000) session, enter your organization's tax number in the tax country in the **Tax Number of Own Company** field.
- Define one enterprise unit.
- Define one accounting office.
- Set up tax registration for the tax country in the regular way.
- If required, set up the Intrastat report and the sales listing.

3 In the Financial Departments (tctax4110m000) session, specify for a financial company the related operational and financial companies and the accounting office in every foreign tax country.
4 If your organization's legal address for matters related to business in the tax country differs from the financial company's address in the tax country, you can enter the legal address.
5 In the Enterprise Modeling Management module, define the required goods transfer relationships between the accounting offices and the warehouses, sales offices, and so on, of the multicompany structure.
6 For transactions that are taxable in another country, define tax code exceptions.

Note: To enable you to define the goods transfer relationships between the accounting offices in the various tax countries and the warehouses, sales offices, and service departments of the logistic companies, all the involved companies must share the Departments (tcmcs065) table.

For more details about tax registration in a foreign country, refer to the *User's Guide for Taxation (U8966* US)*.

Example of tax registration in a foreign country

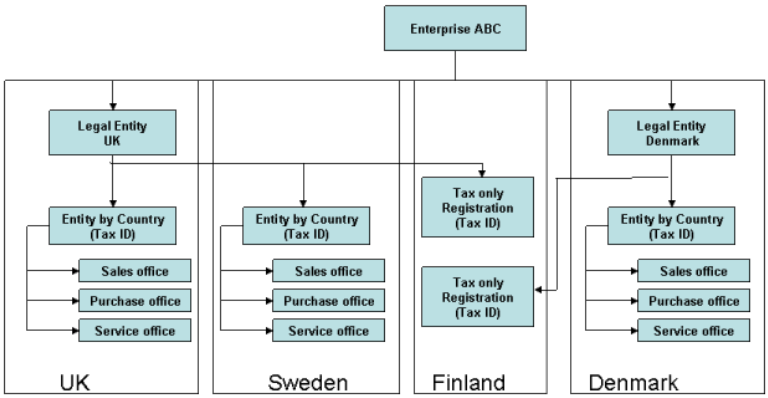
Enterprise ABC has sites in Sweden, Denmark, and the UK. The company consists of two legal entities:

- Denmark: This legal entity contains only the Denmark site
- United Kingdom (UK): This legal entity contains the sites in Sweden and the UK.

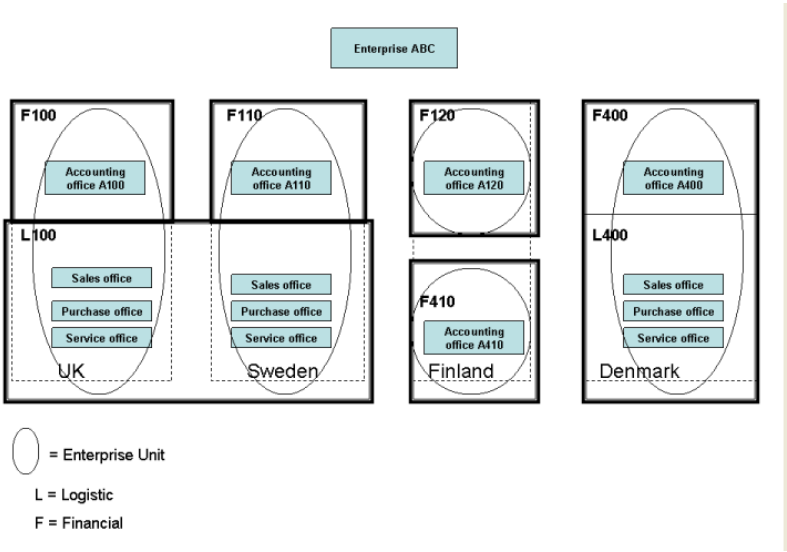
The sites in Denmark and Sweden both perform service activities in Finland which are subject to taxation in Finland.

In Finland, the company requires two tax numbers and must submit the various tax reports twice:

- For the legal entity in the UK
- For the legal entity in Denmark



For enterprise ABC, you can use this multicompany structure:



- Company 100 of type **Both** represents the legal entity in the UK
- Company 110 of type **Financial** represents the legal entity in Sweden
- Company 400 of type **Both** represents the legal entity in Denmark

For tax registration in Finland:

- Company 120 of type **Financial** for transactions owned by the sites in the UK and Sweden
- Company 410 of type **Financial** for transactions owned by the site in Denmark

Note that companies F120 and F410 are not linked to other departments through enterprise units.

If a sales office in the UK, in company L100, creates transactions that are taxable in Sweden, LN puts accounting office A110 as the financial department field on the order header. The financial details of financial company F110 apply to the order and related invoices.

If a sales office in the UK or in Sweden, in company L100, creates transactions that are taxable in Finland, LN puts accounting office A120 as the financial department field on the order header. The financial details of financial company F120 apply to the order and related invoices.

If the sales office in Denmark, in company L400, creates transactions that are taxable in Finland, LN puts accounting office A410 as the financial department field on the order header. The financial details of financial company F410 apply to the order and related invoices.

You must enter the following data in the Financial Departments (tctax4110m000) session:

Financial Company	Tax Country	Financial Department
100	Sweden	A110
100	Finland	A120
110	UK	A100
110	Finland	A120
400	Finland	A410

Multicompany Invoicing

8

This chapter describes the multicompany aspects of the following invoicing processes in LN, each of which are described in detail in the subsequent sections:

- Multicompany sales invoicing
- Internal invoicing

Multicompany sales invoicing

The Invoicing package can generate invoices based on orders in multiple logistic packages, and post the invoices to multiple financial companies.

For one business partner, you can combine sales invoice lines from various logistic packages such as Sales, Project, and Service on one invoice document, provided that the conditions for the composing criteria are met. Invoicing can even combine financial data such as manual sales invoice data into one invoice along with other logistic data.

Invoice documents are generated for each financial company.

- Invoicing cannot combine sales invoice lines for one business partner that are posted in different financial companies on one invoice document.

Set up multicompany sales invoicing

To set up multicompany sales invoicing:

1 Define the billing request template.

If you want to select sales invoices of multiple financial companies, you must create a billing request template that enables you to select orders created in departments that are linked to various financial companies. In the Billing Request Templates (cisli2101m000) session, clear the **One Financial Company** check box.

Invoicing > Master Data > Billing Request Templates (cisli2101m000)

In the Billing Request Templates (cisli2101m000) session, this field is important:

Field	Description	Mandatory
One Financial Company	If this check box is selected, orders that belong to one financial company can be selected to compose the billing request. If this check box is cleared, orders that are linked to multiple financial companies can be selected to compose the billing request.	Yes

2 Set up table sharing.

In a multifinancial company structure, to process central invoicing for multiple financial companies centrally, the companies must share specific tables. You can use the Table Sharing Modeler to share the tables. For more information, refer to the *User's Guide for Multicompany Table Sharing (U9505* US)*.

Process multicompany sales invoicing

Sales invoicing only creates financial transactions in the company of the sales office. Therefore, you cannot generate intercompany transactions when you use the Invoicing package.

If you process sales invoices in a multicompany structure, you can select orders that originate from multiple logistic companies in these sessions:

- Global Confirmation of Order Data (cisli2219m000)
- Billing Requests (cisli2100s000)

Confirm order data for invoicing

Invoicing > Processing of Invoices > Global Confirmation of Order Data (cisli2219m000)

In the Global Confirmation of Order Data (cisli2219m000) session, this field is important:

Field	Description	Mandatory
Logistic Company	You can select orders of various logistic companies that belong to one financial company or to financial companies belonging to one financial group.	Yes

Create billing requests

Invoicing > Processing of Invoices > Billing Requests (cisli2100s000)

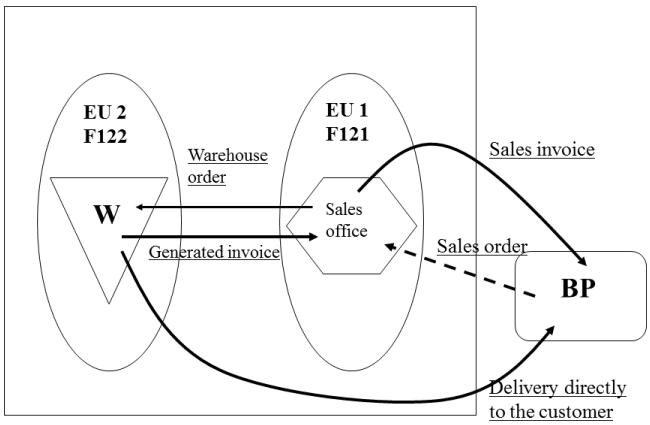
In the Billing Requests (cisli2100s000) session, these fields are important:

Field	Description	Mand.
Financial Company	If you cleared the **One Financial Company** check box in the Billing Request Templates (cisli2101m000) session, you can select orders that belong to multiple financial companies of a group company.	Yes
Logistic Company	You can select orders of various logistic companies that belong to one financial company or financial companies belonging to one financial group.	

Internal invoicing

Based on the applicable type of trade, internal financial settlements can be generated for the transfer of material, labor, or other costs goods, and the associated invoices sent by or received by various entities. The entities can be departments, warehouses, and internal or external business partners. LN can automatically create the internal invoices or the settlement between the entities in the financial companies that are involved.

External material delivery can occur between enterprise units of the same logistic company and different financial companies. LN uses the self-billing function to generate the internal invoices and payments. An example of this is shown in the following figure:



Example

A sales office and a warehouse are linked to enterprise units of one logistic company.

The sales-office's enterprise unit is linked to financial company 121 and the warehouse's enterprise unit is linked to financial company 122.

A sales order arrives from an external business partner to the sales office.

The sales office initiates a warehouse order to ship the goods from the warehouse to the business partner.

The sales office sends an invoice to the invoice-to business partner. This results in an open receivable invoice for the sales office in the financial company of the sales office's enterprise unit.

At the same time, the warehouse's financial company expects a payment for the goods. LN generates these invoices with the corresponding payments:

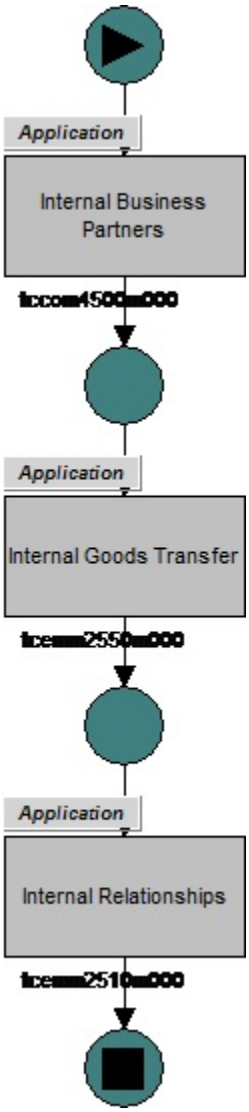
- An open receivable invoice for the warehouse in the financial company of the warehouse’s enterprise unit
- An open payable invoice for the sales office in the financial company of the sales office's enterprise unit

Invoicing between service departments and warehouses

In Service, invoicing is possible for internal trade between service departments and warehouses for service and maintenance sales orders.

Set up internal invoicing

Before you can apply internal invoicing, you must set up the required data. The following figure illustrates the setup procedure. The sections below describe the steps of the internal invoicing setup procedure.



1 Define the internal business partners.

An internal business partner represents an enterprise unit of the same logistic company. The use of internal business partners allows you to model the goods flow between enterprise units and the corresponding financial relations, such as invoicing and pricing agreements.

For all relations between the entities of the one logistic company that are linked to different financial companies, you must define internal business partners in the Business Partners (tccom4500m000) session.

Common Data > General Data > Business Partners > Business Partners (tccom4100s000)

On the **Enterprise Modeling** tab, select the **Internal Business Partner** check box. On the Specific menu, link this business partner to the **Enterprise Unit** that it represents. You must define all business partner roles for an internal business partner.

2 Set up the internal trade relationships.

Internal trade relationships allow you to apply the LN pricing and invoicing to the transfer of material, labor, or other costs goods between the entities of one logistic company, without using sales orders

and purchase orders. You must define an internal trade relationship between entities or enterprise units if you want LN to perform one or both of these actions:

- Generate invoices for the transfer of material, labor, or other costs goods within a single logistic company.
- Apply a sales order price for the goods or add a surcharge percentage to the actual costs.

Note: Internal trade between entities other than warehouses outside the logistic company (affiliated-company business partners and external business partners) is always controlled through sales and purchase transactions.

You can set up the internal trade relationships in the Internal Trade Details (tcemm2151m000) session.

In the menu: **Common Data > Enterprise Modeling Management > Relationships > Internal Trade Details (tcemm2151m000)**

3 Set up the entity-entity relationships.

To external material delivery, the internal trade relationship between warehouse and sales office applies. To create a direct delivery from the financial company of the warehouse to the financial company of the sales office, you must define the entity-entity relationship between the warehouse and the sales office, in the Entity-Entity Relationships (tcemm2110m000) session.

Menu: **Common Data > Enterprise Modeling Management > Relationships > Entity-Entity Relationship (tcemm2110m000)**

The following table lists the relevant fields of the Entity-Entity Relationship (tcemm2110m000) session:

Field	Description	Mandatory
From Entity Type	Select the type of entity from which the material, labor, or other costs originate.	Yes
From Entity	Select the entity from which the transfer of material, labor, or other costs will take place.	Yes
To Entity Type	Select the type of entity to which the material, labor, or other costs are destined.	Yes
To Entity	Select the entity to which the material, labor, or other costs are destined.	Yes
Process	Select the appropriate type(s) of internal trade.	Yes

4 Set up self-billing (internal purchase invoice).

Self-billing is used in an external material delivery scenario because then the internal supplier does not need to send an invoice. Instead, the internal customer uses the self-billing procedure to automatically create invoices for this kind of trade. If you apply self-billing, LN matches, and approves invoices automatically when the internal invoice is generated. This is all done in the **Accounts Payable** module.

The steps of the self-billing procedure are described below:

1. The goods are received in **Warehouse Management**. In **Accounts Payable**, LN generates a purchase invoice document with the transaction type for self-billing that you specified in the ACP Parameters (tfacp0100s000) session.
2. On generation of the invoice, LN creates an open entry.
3. LN matches and approves the document without any user interference. Matching and approving cannot be a problem, because the invoice was generated based on the order to which it is now matched.
4. LN creates the postings to the general ledger for the generated purchase invoice in the usual way.

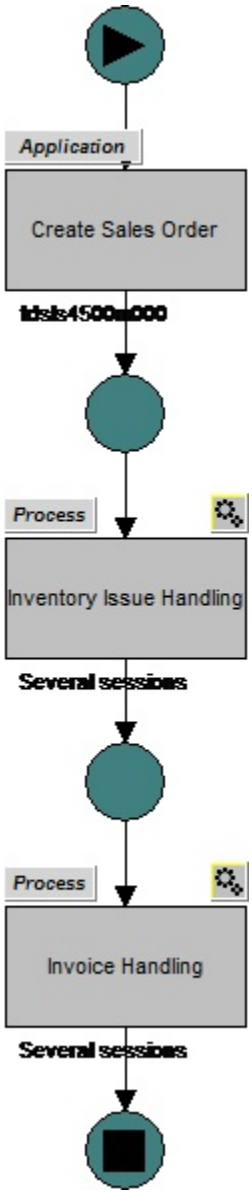
Invoicing example

In this example, logistic company L121 contains a sales office that belongs to financial company F121. The sales office sells goods to an external business partner. The goods are delivered from a warehouse that belongs to financial company F122. The warehouse is defined as an internal business partner.

These prices are used:

- Sales order price financial company 121: $5,000
- Actual costs financial company 122: $1,500
- Surcharge: 10%

The following figure shows the main process flow:

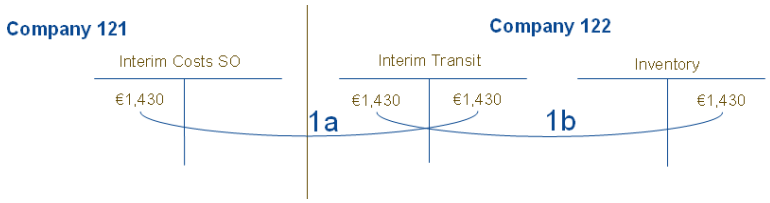


The financial transactions created during the invoicing process are summarized in the following picture.

If a debit and credit line of a transaction belong to different financial companies, the intercompany transactions are created automatically at finalization.

The sections below describe each posting in more detail.

1 Issue the goods.



The figure below shows the issuing of the goods from the warehouse of company 122, and the internal and external sales invoice process transactions. The posting to be set up for each transaction is described below. Note that the integration document types (IDT) and reconciliation groups are predefined in LN.

The steps in the table refer to the steps in the figure.

Issue goods					
Triggering session: Confirm/Freeze Receipts					
Transaction created in company: company 122					
	Define mapping for	**Ledger Accounts**		**Reconciliation Group**	
		Debit	**Credit**	**Debit**	**Credit**
1a	IDT Sales Order/ Issue	Interim Costs Sales Order (comp 121)	Inter company 122	Interim Costs 1	n.a.
		Intercompa-ny121	Interim Transit (comp 122)	n.a.	Interim Transit 1

Issue goods					
1b	IDT Warehouse Issue/ Issue	Interim Transit	Inventory	Interim Transit 1	Inventory 1

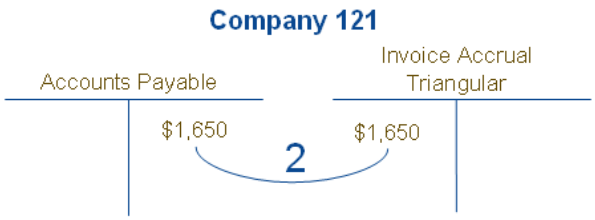
At the time of issue, LN also creates the following:

- An internal purchase invoice batch in the financial company of the sales office.
- An internal sales invoice in Invoicing.

1 Create the internal purchase invoice

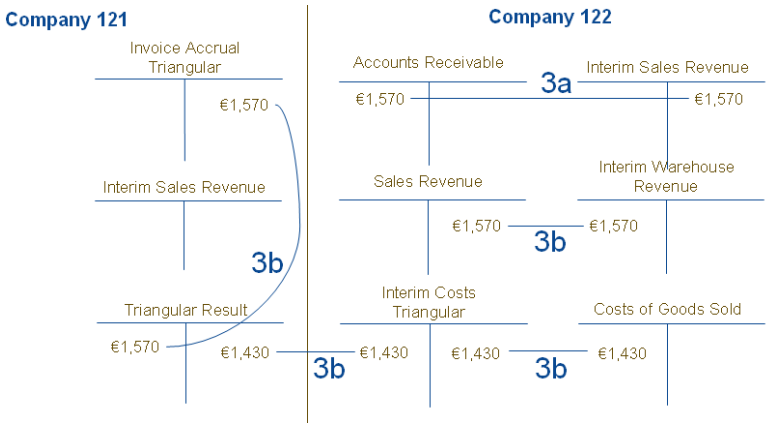
The internal purchase invoice is generated with the subsequent statuses Registered, Matched, and Approved in financial company F121 of the sales office. No intercompany transaction is created.

You generate the internal invoice in the Generate Self-Billed\Internal Purchase Invoice (tfacp2290m000) session.



1 Generate the sales invoices

Next, an internal sales invoice and an external invoice are created.



Internal sales invoice

In Invoicing of financial company F122 in which the goods are issued, an invoice header is automatically created for the internal warehouse order.

Internal sales invoice (open entry creation)
Triggering session: Compose/Print/Post Invoices
Transaction created in company: company 122

Internal sales invoice (open entry creation)					
	Define mapping for	**Ledger Accounts**		**Reconciliation Group**	
		Debit	**Credit**	**Debit**	**Credit**
3a	Financial Business Partner Group	Accounts Receivable		n.a.	
	Sales Order / Revenue Analysis		Interim Revenue		Interim Revenue 5

In the integration table, the following transaction is created:

Internal sales invoice (integration transaction)					
Triggering session: Compose/Print/Post Invoices					
Transaction created in company: company 122					
	Define mapping for	**Ledger Accounts**		**Reconciliation Group**	
		Debit	**Credit**	**Debit**	**Credit**
3b	IDT Warehouse Issue/ Revenues Analysis	Interim Revenue	Sales Revenue	Interim Revenue 5	End Account 714
3b	IDT Warehouse Issue/ COGS Triangular	Costs of Goods Sold	Interim Costs Triangular	End Account 702	Interim Costs 6
Transaction created in company: company 121					
	Define mapping for	**Ledger Accounts**		**Reconciliation Group**	
		Debit	**Credit**	**Debit**	**Credit**
3b	IDT Sales Order/ COGS Triangular	Interim Costs Triangular (comp 122)	Inter company 121	Interim Costs 6	n.a.
3b	IDT Sales Order/ Triangular Invoicing	Triangular Result	Invoice Accrual Triangular	End Account 166	Invoice Accrual 5

External sales invoice

When you have released the original sales order for the external business partner in the Released to Invoicing (tdsls4501m130) session, in Invoicing of financial company F121 in which the order was created, an invoice header is automatically created for the external business partner.

External sales invoice (open entry creation)					
Triggering session: Compose/Print/Post Invoices					
Transaction created in company: company 121					
	Define the mapping for	**Ledger Accounts**		**Reconciliation Group**	
		Debit	**Credit**	**Debit**	**Credit**

External sales invoice (open entry creation)					
4a	Financial Business Partner Group	Accounts Receivable		n.a.	
	Sales Order / Revenue Analysis		Interim Revenue		Interim Revenue 5

In the integration table the following transaction is created:

External sales invoice (open entry creation)					
Triggering session: Compose/Print/Post Invoices					
Transaction created in company: company 121					
	Define mapping for	**Ledger Accounts**		**Reconciliation Group**	
		Debit	**Credit**	**Debit**	**Credit**
4a	Financial Business Partner Group	Accounts Receivable		n.a.	
	Sales Order / Revenue Analysis		Interim Revenue		Interim Revenue 5

Multicompany Enterprise Planning

9

Companies can have multiple production sites within or across country borders. The planning of the production sites can be controlled either by a central planner or by local planners. Enterprise Planning must support this very important difference.

This chapter describes the multisite planning functionality in Enterprise Planning. Knowledge of the standard planning logic in Enterprise Planning is a prerequisite for understanding the functionality and concepts described in this chapter.

Enterprise Planning supports multisite logistic planning that involves multiple logistic companies in various ways. The following two main types of multisite planning techniques can be distinguished:

- Multisite planning in one logistic company. The cluster concept.
- Multisite planning across logistic companies:
  - Decentralized multisite planning
  - Central multisite planning

Multisite planning in one logistic company

The cluster concept

In fact, you can create a multisite environment in one logistical LN company. In Enterprise Planning, you can set up a distribution structure that represents a supply network between warehouses across the world in one company. You can do this by means of the cluster concept.

An enterprise's supply chain consists of a number of entities such as assembly plants, components production plants, and distribution centers. To set up those entities in one logistic company, you can create separate warehouses and work centers for each separate entity.

The next step is to determine what level of planning is required. By simply creating a multilevel bill of material with the appropriate warehouse linked to each component, a supply chain is already created.

With one planning run the demand from the top level is calculated through the bill of material and exploded demand is created for the lower level components at the appropriate warehouse, site or entity.

If you require a more separated planning, you can use clusters. A cluster represents a production site and is defined by adding the appropriate warehouses and items into a cluster. This cluster is only used in planning to enable separate planning by site even in one logistic company. As a result, you can, for example, create a cluster for component production and another cluster for final assembly.

To ensure that the components are delivered from the components cluster to the assembly cluster, a supplying relation is created. In this supplying relation, the From and To clusters are defined for each component that must be shipped from one cluster to another cluster. Because the clusters only exist in planning, the warehouse order only shows that the component is shipped from warehouse A to warehouse B.

Multicompany planning across multiple companies

Two implementations of multisite planning in a multicompany structure can be distinguished:

Decentralized multisite planning
Each local site (company) runs unique planning. Dependent demand between companies is exploded by means of supplying relations in Enterprise Planning or triggered by EDI (purchase/sales relation). No central planning effort is required. In fact, this type of planning is not multicompany planning, but rather local planning with exchange of demand and supply between the companies.

Central multisite planning
One central plan triggers planning at local sites in a coordinated way.

This chapter describes central planning.

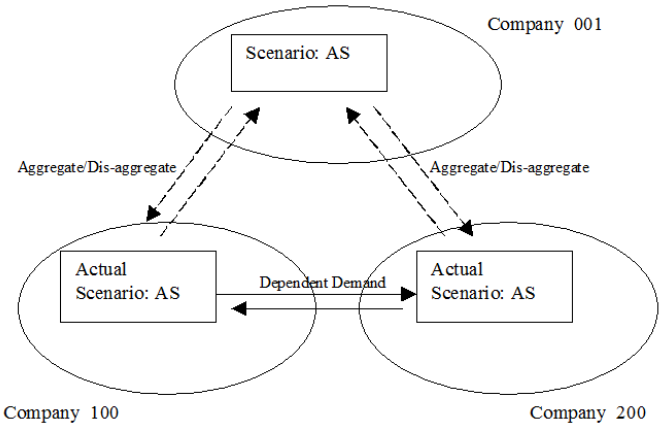
Planning scenarios and company structures

The planning scenario is the general definition of the logistic plan and determines basic information such as the start and the end date of the planning horizon. In every company, you can define a scenario in the Scenarios (cprpd4100m000) session.

The most logical way is simply to use actual scenarios in the local sites (production plants) for multisite planning. Only for the actual scenario planned orders can be transferred to execution in Shop Floor Control, Warehouse Management, and Purchase Control.

Which scenario is considered actual is defined in the EP Parameters (cprpd0100m000) session. In the central site/scenario, no orders need to be generated because no operations (production or distribution) take place in that company. Therefore, multicompany scenario is usually not the actual scenario of that company.

However, you can technically define the central multicompany scenario as actual in the EP parameters, as illustrated in the following figure:



In a multicompany structure, the following rules apply:

- In the Scenarios (cprpd4100m000) session, only the scenario that is used to control the local plans, which, in the example, is scenario AS in companies 100 and 200, from a central site is indicated as the Central Multisite scenario, which in the example is scenario AS in company 001.
- The scenarios that are linked for exploding dependent demand across company borders must have the same scenario code in the various logistical companies.
- Scenario codes of the scenarios that are linked for aggregation/ disaggregation purposes across company borders must have the same scenario code in the various logistical companies.
- Conclusion: All scenarios that are linked for multicompany planning must have the same scenario code to support planning across multiple sites as well as aggregation and disaggregation between the sites.
- Only if the scenario is Actual, planned orders can be transferred to Shop Floor Control, Warehouse Management, and Purchase Control. Because you do not want to do this for the central scenario, the central scenario usually is not the actual scenario in that company because the central scenario is only used to coordinate the local scenarios in the other companies.

Plan sites

You only need to define plan sites in the Scenario - Sites (cprpd4140m000) session if central multisite planning is performed through a central scenario. You must define the plan sites in the company where the central multicompany scenario resides.

Note that the central multisite scenario code can differ from the scenarios of the underlying companies (the site plans). If the code differs, you can perform the central simulation from the central scenario, however, you cannot perform aggregation and disaggregation from and to the related scenarios. The reason for this is because aggregation relationships are scenario-independent. The aggregation data can only be transferred in the same scenario.

Note: Only the items at the plan level defined in this session will be taken into consideration during a simulation run. This also applies to a usual single-site run, which is also carried out on plan level.

Plan item data

In the Items - Planning (cprpd1100m000) session, the **Central Multi Site Planning** setting is of major importance for central planning.

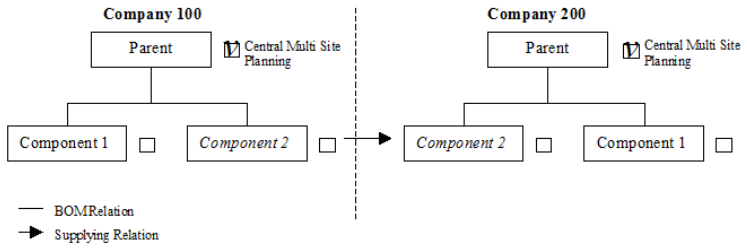
To perform a central planning run:

1. Start the simulation run the central site to simulate the central multicompany scenario. Through the Items – Planning (cprpd1100m000) session, the related scenarios that are linked to this central multicompany scenario are selected.
2. Start the simulation run locally for these scenarios in the companies in which the scenarios of the Plan Sites session are defined. Only the items for which you selected the **Central Multi Site Planning** check box in the Items - Planning (cprpd1100m000) session are planned.

Multicompany top-down simulation

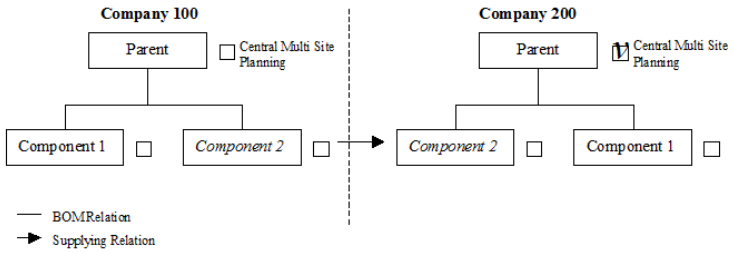
If the non-centrally planned components of the plan item that is planned by central multisite planning must also be planned in the same run, select the **Use Top-Down Item Selection** check box in the Generate Order Planning (cprrp1210m000) session. The simulation run that is started locally by company will start to simulate the plan items for which you selected the **Central Multisite Planning** check box.

If you also select **Use Top-Down Item Selection** check box, all the components of these items are also included in the simulation run. This enables you to perform a complete multicompany planning run, which includes all BOM components and even includes demand explosion across company borders that is picked up in the other company, as shown below:



However, if you do not select **Central Multisite Planning** for the parent item in company 100, as shown in the following figure, no planned orders will be generated for Component 2 in company 100. Only the dependent demand originating from the supplying relation with Component 2 in company 200 will become visible.

To resolve this issue easily, simply select **Central Multisite Planning** for Component 2 so that Component 2 will also generate a planned order based on this dependent demand. However, this has consequences for, and can conflict with, the local planning in company 100 because the dependent demand from the parent can be unknown at the moment of central planning.



Note: Top-down simulation does not trigger order plan simulation or master plan simulation by means of supplying relations.

Supplying relations

Supplying relations that you define in the Supplying Relationships (cprpd7130m000) session model the supply between items within or between logistical companies. The dependent demand is exploded by means of this relation.

Bill of Material (BOM)

A BOM relation defined in the Bills of Material (tibom1110m000) session is only valid in the logistic company. Therefore, you cannot pass dependent demand between BOM levels across companies.

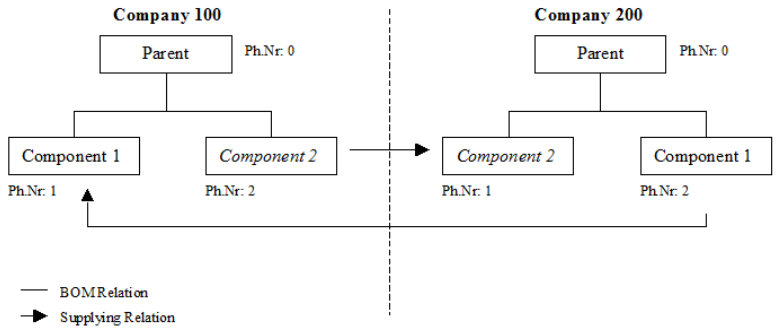
Phase number calculation

You can perform phase-number calculation in two ways:

Online
Select the **Online Phase Number Update** check box in the EP Parameters (cprpd0100m000) session.

Offline
Run the Compute Phase Numbers (cprpd6200m000) session.

The phase number calculation takes both the BOM and the supplying relations, which can be intercompany, into consideration, as illustrated in the following figure:



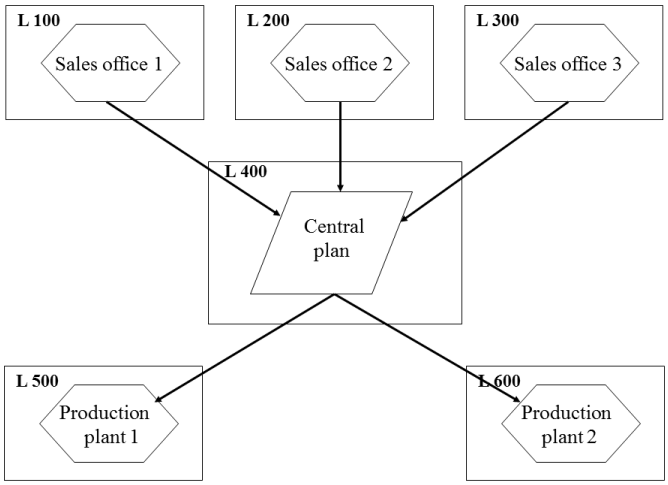
The simulation run follows the phase numbering logic shown in this figure. If you perform a Central Multisite planning run from another company, in the multicompany scenario, the simulation run will follow this logic across company borders.

As a result, the simulation run performs these steps:

1. The parents in both companies are planned (Phase number 0).
2. Component 1 in company 100 and component 2 in company 200 are planned (Phase number 1).
3. The dependent demand from component 1 in company 100 is exploded to component 1 in company 200, and from component 2 in company 200 to component 2 in company 100.
4. Component 1 in company 200 and component 2 in company 100 are planned (Phase number 2).

Aggregation relations

Another type of multicompany support that Enterprise Planning provides is aggregation and disaggregation of planning data. In the following figure, forecast data from multiple sales offices is aggregated centrally, and provides the input for planning multiple production plants. Six logistic companies are used to model the business flow. Forecast data from the various sales offices is aggregated in a central plan. To do so, you must define aggregation relationships from the various sales offices and the central site.



To consolidate local demand and supply data to a central company level, aggregation relationships must be defined in the Aggregation Relationships (cprpd3110m000) session. The aggregation relationship makes explicit between which items/companies the data must be aggregated. In addition to the aggregating data, you can also use the aggregation relationships for disaggregation of demand and supply data.

Note: The planning percentage in the aggregation relationship is used for aggregation, as well as for disaggregation.

Aggregation

Using aggregation, you can update the central multisite plan with this local planning data:

- Production plan, purchase plan
- Planned production orders, purchase orders, and distribution orders
- Inventory plan
- Demand forecast
- Extra demand

The update of the central plan is performed when you run the Aggregate Channel, Plans & Orders (cprmp2250m000) session.

In the Aggregate Channel, Plans & Orders (cprmp2250m000) session, you can select an update mode, which can be **Overwrite** or **Add To**. If you select **Overwrite**, the original values in the target fields will be deleted. Subsequently, the content of the origin fields, which is the scenario from which you aggregate, fills the target fields of the scenario to which you aggregate.

Note: If you select **Add To**, the fields of origin will be added to the original value of the target fields.

The aggregation relations are scenario independent, while the aggregation/ disaggregation is performed by scenario. At the same time, the central multisite scenario cannot have the same scenario code as

the local scenario if both reside in the same logistic company. Therefore, you must set up a separate logistic company for the purpose of aggregation/disaggregation.

Disaggregation

Through disaggregation, you can update local plans from the central plan with this planning data:

- Production plan
- Purchase plan
- Inventory plan
- Demand forecast
- Extra demand

Note: Planned production orders and purchase orders can be disaggregated to the **Production Plan** field of the item in the local plan. Distribution orders cannot be disaggregated.

To perform disaggregation, run the Disaggregate Channel, Plans & Orders (cprmp2260m000) session.

In the menu: **Enterprise Planning > Master Planning > Item Planning > Disaggregate Channel, Plans & Orders (cprmp2260m000)**

For disaggregation, you can select one of these rules:

Dissaggregate factor
You can perform disaggregation according to the planning percentage in the aggregation relationships.

Inventory level
Disaggregation is based on the degree in which the inventory is expected to be below the required level.

Capable-to-promise
Disaggregation is based on the capable-to-promise data.

Note: Aggregation and disaggregation functionality only applies to items that have a master plan.

Affiliated company – multicompany purchase relation

In multisite environments, a purchase/sales relation often exists between the sites. For example, a component site delivers the components that a production site requires.

If you run a central simulation, the dependent demand is generated from the production site to the component site. In fact, the production site sees the component site as a (internal) supplier. Conversely, the production site is a (internal) customer for the component site. Both sites must, therefore, be defined as business partners to model this supplier–customer relation.

You must define the business partner as an **Affiliated Company** check box in the Business Partners (tccom4500m000) session, and specify the logistic company with which the purchase/sales relation exists.

Table sharing

To be able to explode demand across company borders and to aggregate/ disaggregate, the companies between which the transactions take place must be able to address each other and must share the company settings. The following tables, among others, must be shared:

- Company Data (tccom000)
- Companies (tcemm170)

For more information, refer to the *User's Guide for Multicompany Table Sharing (U9505* US)*.

Central planning

For multicompany planning, two basic procedures exist:

- The local planning procedure
- The central planning procedure

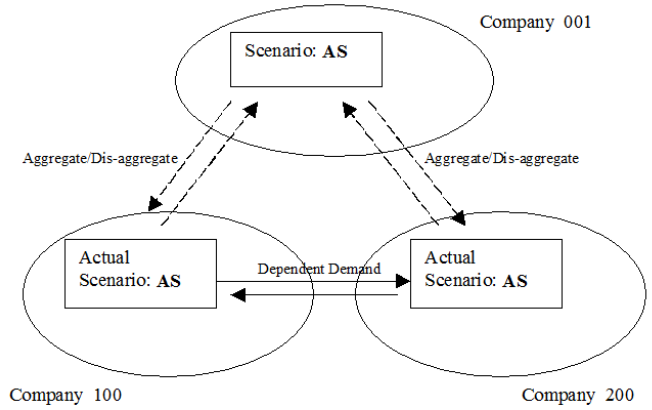
You can use the central multisite scenario for:

- Aggregation and disaggregation
- Central simulation

Aggregation/disaggregation

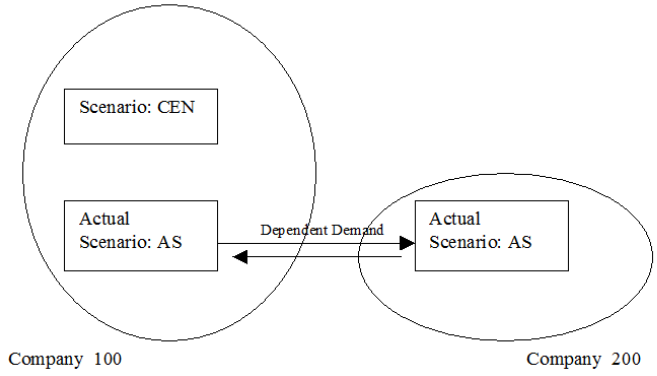
If you use the central scenario for aggregation/disaggregation purposes, you must define the scenario in a separate logistical company, because the aggregation relation is scenario-independent. This also implies that the central scenario and the local scenarios must have the same scenario code, otherwise, the aggregation relationship cannot be recognized, as shown in the following figure.

Note: Scenario AS in company 001 does not have to be a central multisite scenario if it is only used for aggregation/disaggregation, and not for simulation.



Simulation

If you only use the scenario to control the local simulation runs, in other words, the scenario starts the separate simulation runs in the other companies, you can define the central multisite scenario in one of the local sites. In this case, modeling a separate company for the central multisite scenario is unnecessary, as shown in the following figure:



Local planning

Local planning is similar to a normal planning situation in a single site environment. The only extension is that supplying relations or purchase/sales relations exist with other companies.

Summary

In a multicompany structure, LN supports central multisite planning. In other words, a central planner can control the simulation of the local plans in the various sites.

You can also perform aggregation and disaggregation of demand and supply data to the central plan. This feature supports central forecasting, inventory planning, and production planning.

Local planning with purchase/sales relations between the sites is supported in multicompany environments. In this case, the simulation is not triggered by a central planner, but by local planners. If a site delivers to another site, dependent demand is generated during simulation. The delivery is then executed by means of purchase/sales orders.

Multicompany Manufacturing

10

This chapter describes the effects of a multicompany situation on the various parts of Manufacturing:

- Product definition
- Engineering data management
- Routing
- Production scheduling
- Assembling the item
- PCS projects

Product definition

The manufacturing product data is specific to each logistic company. The manufacturing product data includes the item data, bill of materials, and routing.

If you use a multilogistic company structure, the companies must share the basic item data, such as the item code and the item type, which you define in the General Item Data (IBD) module of Common Data. The other item data, such as item purchase data or item production data, do not have to be shared.

If the product routing includes two or more logistic companies, you must define the logistic companies as each other's affiliated-company business partners. You must define a multilevel BOM, multiple routings, and intermediate items. In each logistic company, you must define a routing for each single level BOM. The routing can only include tasks that you defined in the same logistic company.

The transfer of the work between the logistic companies is controlled by means of purchase and sales transactions and invoices. You can use internal Electronic Data Interchange (EDI) as a fast method to generate and exchange the orders and invoices.

Bill of Material (BOM)

Warehouses are linked to each item of the bill of material. Because each warehouse, and department, has a link to an enterprise unit, the link to the financial company is defined. For a single logistic or multifinance setup, this implies that different components can be produced at different sites, although all data exists in one logistic company. Each site, however, can have a unique financial company.

If items or components are shipped between warehouses that belong to various enterprise units, an internal trade relationship must be set up in EMM, based on up to four types of trade:

- Internal Material Delivery
- External Material Delivery
- Direct Delivery
- Internal Subcontracting for Depot Repair

The specified internal trade relationship is used to generate invoices between the various financial companies, based on the shipment.

Routing

In the Routing (ROU) module of Manufacturing, you define work centers, machines, and tasks on the logistic company level. A work center is linked to an enterprise unit that determines the financial company. In this way one logistic company can contain work centers in multiple countries. The work centers' financial accounting is carried out in separate financial companies, in each country's local currency.

You can link tasks to multiple work centers within the same logistic company. These can be main work centers, sub work centers or subcontracting work centers. LN uses the default work center for planning and cost price calculations. During production order scheduling, you can easily change the work center. Scheduling and production order costing use the work centers in the production planning.

Note: The enterprise units do not influence linking the tasks to work centers.

The work center concept was designed for a single-logistic company environment. However, if you use the correct naming conventions and data replication methods, you can perform implementation in a multilogistic company structure.

Standard cost price

Every item can have only one standard cost price for each logistic company. As a result, if the same item is produced at two different production sites, both sites must have the same standard cost price.

If that is a problem, because, for example, the machine rates or the production routings differ widely, you must set up multiple logistic companies. Another possible solution is to link various actual costs to the item. If an item is shipped between warehouses within the same company, the actual costs of

the item can change. As a result, although the standard cost price is always the same, the actual costs can differ by warehouse.

Different logistic companies can produce the item in different ways by using different bills of materials, different routings, and different costing structures. This results in a different cost price per company, because LN calculates the cost price based upon this data. The item cost price is mainly used in simulations, estimations, and cost analysis. If the same items have cost prices in the various companies, inventory transactions have different effects on the inventory value, depending on which cost price is used. In each company, LN determines the local valuation price for each item and warehouse combination. This valuation price can be derived from the cost price.

LN uses one currency for the standard cost price. In a dependent currency system, you can use various currencies for the work centers, operation rates, subcontracting rates, and surcharges. In that case, you must define an item currency. LN uses the internal exchange rates to translate the operations cost and materials costs to the item currency. If an exchange rate changes, you must also update the standard cost price. If the internal rates are used in the cost price calculation, LN cannot change historical internal rates

Note: LN calculates specific cost prices per project and also performs inventory valuation of customized items that you produce using the Project Control (PCS) module for customized items.

Engineering data management

Engineering data management and change order control is restricted to items in one logistic company. To control the engineering data in a multilogistic company, you must set up the required data sharing and replication processes. Engineering data management does not involve any financial transactions or cost calculations. Therefore, enterprise units do not have any effect on the engineering data management functions.

You can use one of the following applications for engineering data management and change order control:

- Engineering Data Management (EDM) module of Manufacturing
- Object Data Management

Engineering Data Management (EDM)

You can use the Engineering Data Management (EDM) module to define:

- Engineering items
- Engineering item versions
- Engineering bill of materials
- Relationships between engineering items and standard or customized items

The Engineering Data Management (EDM) module also includes an approval procedure.

You can define the engineering data in two ways:

- You enter the definitions manually
- LN bases the definitions on engineering change orders (mass BOM changes).

EDM can control the engineering data that is defined in one logistic company. Engineering items can only be related to standard items and customized items in the same logistic company, and the engineering procedures only apply in the logistic company.

The engineering item data contains information that is related to the following session data:

- Items - General (tcibd0501m000)
- Items - Ordering (tcibd2500m000)
- Items - Production (tiipd0101m000)

The engineering BOM is related to the manufacturing BOM. EDM also uses some common data for the definition of the engineering item data.

The logistic companies of a multilogistic company structure can use the same item revisions if you ensure the data consistency between:

- The EDM data in both companies for retrieval of the correct revision code
- The EDM module and the related item data. Apart from the EDM data, some or all of the general item data, item ordering data, item production data, and the bill of materials must also be synchronized.
- The common data that is used to define the engineering items. For example, this includes suppliers, item types, item groups, unit sets, and signaling codes.

Object Data Management (ODM)

Object Data Management contains, in addition to the functions of the EDM module, functions for the definition of document trees, revisions on documents, and for linking documents (versions) to item (versions). The documents can be of any type, ranging from CAD drawings to marketing brochures. Object Data Management contains workflow functions to facilitate and accelerate the engineering activities.

You can use the Object Data Management package for multiple logistic companies. This enables you to implement central document management in a multicompany scenario. To do so, you must share the following tables:

- First Free Numbers (tcmcs050)
- Number Groups (tcmcs051)

The reason to share these two tables is to make sure that each object, e.g. an Item record or a Service Order record, is unique across the companies in a multi company structure.

The following example gives further explanation:

Example

Suppose the following:

- A multicompany environment consists of company 100 and 200. 100 is the physical company where all tables are physically stored. Some tables are shared with company 200.
- Document Management is multicompany enabled.
- The Items table is not shared. So it is possible that 2 different items with the same item code exist. For example: company 100 and company 200 both contain an item with item code “ITEM_001”. These are 2 separate item records, each with different properties.
- You try to link a document “DOC_001” to “ITEM_001” in company 200. The Objects Links (dmcom010) table is also shared. Therefore the link between “DOC_001” and “ITEM_001” is also visible in company 100. This is not correct, because “ITEM_001” in company 200 and “ITEM_001” in company 100 are different records and must not be linked to the same document.

To avoid this type of problems, you must make sure that objects (such as Items, Service Orders and Sales Orders) with duplicate key values cannot exist across the companies in a multicompany structure Therefore you must share the First Free Numbers and the Number Groups tables. In this way, all Item Numbers, Order numbers, etc. that are assigned by the software, will be unique across the different companies.

Production scheduling

You schedule the production in the Shop Floor Control (SFC) module. The production schedules are valid for the production orders within the logistic company. Enterprise units do not influence the production scheduling.

LN stores the production schedule dates in universal time code (UTC) format. The user’s time zone is used to convert the dates to the local dates before it is displayed. The time zone related to the financial companies of the enterprise units is not used in production scheduling.

Note: If you have implemented the Infor SC Scheduler, you can schedule the required production capacity against limited available resources. The Scheduler determines scheduled dates based on the production orders and other scheduling data. However, you can only use the Scheduler to schedule the production orders in one logistic company.

You can use the Infor SC Planner to plan orders in a multicompany environment.

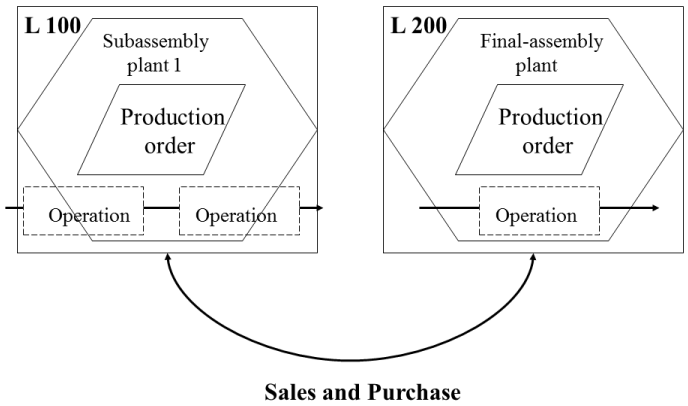
Production in multiple companies

You define the production orders separately for each logistic company. If parts of the assembly are performed in various logistic companies, you can:

- Use a multilevel bill of materials:. The items in the multilevel BOM are planned and produced relatively independent of each other.
- Define subcontracting task:. You can subcontract the work to another logistic company, using the normal purchasing and invoicing procedures. You must define the logistic company as an affiliated-company business partner and in the invoice-from business partner data you must specify that this is a subcontractor.

Note: In the current company, you cannot monitor or control the production progress in the subcontracting company.

Work in Process (WIP) transfer between the work centers is controlled through sales orders/purchase orders, as shown in the following figure:



Production in different enterprise units

The work centers on the production order can belong to different enterprise units. The production order itself is also linked to an enterprise unit by means of a work-center that acts as a calculation office. You can set parameters to determine whether LN calculates and registers the financial data:

- On work-center level in the financial company of the work center's enterprise unit
- On order level in the financial company of the calculation office's enterprise unit. You can do this in earlier versions of LN.

The financial data consist of the production cost, the Work in Process (WIP) value, and production variances. LN registers the financial data in the reference currency of the financial company linked to the appropriate enterprise unit.

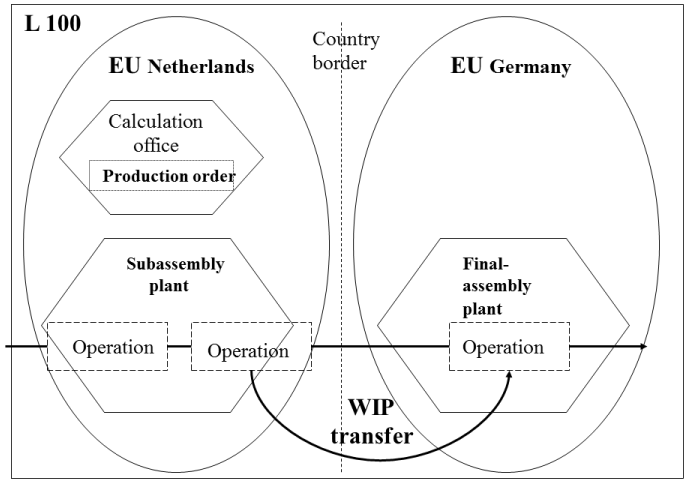
If you issue items to an operation, LN registers the WIP value in the work center of the operation. On the work center level, the WIP value consists of issued materials and booked hours. On order level, the WIP value consists of surcharges, issued materials, and booked hours.

WIP transfers

During the execution of the production order, you can carry out a WIP transfer. A WIP transfer is the transfer of the estimated WIP value to the next work center. After completion of a number of items, or the completion of the total operation, a value is transferred to the next work center. If the work centers

are located in different countries, WIP transfers are especially important to ensure a correct registration of the WIP value in each country.

You can specify the pricing type, surcharges, and invoicing method to be used for internal trade between work centers that belong to different enterprise units by defining the internal trade relationships in the EMM module. The calculation office collects the WIP values on the production order level. These values mainly consist of the production surcharges. You can also use the calculation office in the completion and receipt of finished end items in the warehouse, as shown in the following figure:



The production results are divided into price variances, efficiency variances and calculation variances. You can set parameters to determine whether LN posts the price and efficiency variances to the work center or to the order. If the work centers and production orders are linked to different enterprise units, LN can post the production results to different financial companies.

Subcontracting

If part of the routing is not performed within your own company, this setup is called subcontracting. The subcontractor is the organization that performs the subcontracted operation.

LN supports the following types of subcontracting:

- Subcontracting without goods flow support: This type of subcontracting is treated as the purchase of a service from a subcontractor. You create a purchase order for this service, but the transfer of subassemblies between the manufacturer and its subcontractor is not recorded in LN.
- Subcontracting the entire routing to a subcontractor – with goods flow support: The subcontractor performs the entire manufacturing process. You can send components to the subcontractor and receive the finished product.
- Subcontracting some operations to a subcontractor – with goods flow support: The subcontractor performs a part of manufacturing process. You can send components and the unfinished product to the subcontractor and receive the unfinished or finished product.

- Subcontractor's side – with goods flow support: You perform operations for a customer that is the main contractor. You can receive an unfinished product and components and you return the finished or semi-finished product to the main contractor.

For more information, refer to *User's Guide for Subcontracting (U9361* US)*.

Multisite assembly

Some types of products that are manufactured in production environments are characterized by high volumes, many variants and complex products. In these environments the configurable products are in most cases produced in flow lines.

This production type can be called 'mixed model flow' production. Companies of this production type (for example car manufacturers) require a manufacturing execution system, which enables them to schedule and control many complex orders per day, without a lot of systems overhead.

The Assembly Planning (APL) and Assembly Control (ASC) modules are used to support situations for companies of the production type mentioned.

These modules provide functionality for the scheduling and control of assembly processes in which many complex orders are executed on assembly lines.

The production orders are generated in APL and executed in ASC. The assembly process can be executed in multiple logistic companies. The multi site assembly structure is defined in one central company. This structure consists of assembly lines. Every line is linked to a logistic company. When that company is different from the central one the line will be replicated to that company on the moment that the line structure is actualized.

A specific product that is sold to a customer is identified by a product variant. In a single company situation one assembly order is generated for a product variant. In a multi site situation the central company generates one assembly order per company. Those orders are related to each other. In this situation multiple assembly orders are linked to one product variant.

The production schedules in a multi site situation can be kept in sync. The WIP transfer between the supplying and the main company is handled via intercompany sales and purchase orders. The information is communicated via EDI.

Shared work centers

Some customers have very expensive resources that are used across multiple logistic companies. It is therefore required to share resources over multiple companies and to display the total required capacity of the shared resource. This means that the cumulated capacity requirements of all companies need to be visible. Besides this the capacity requirements of every company for the shared resource need to be visible separately.

For that reason the shared work center concept was introduced. A shared resource consists of multiple "shared" work centers that are defined in different companies.

There are two types of shared work centers, a primary and a secondary work center. In the secondary work centers the real work is executed. In a set of multiple shared work centers one work center will be a primary work center. The work center type is used to view the capacity figures only. The capacity related figures of the secondary work centers are aggregated to the primary work center. In this way the total capacity of the shared resource is visible in the primary work center.

At the secondary work centers the required capacity of the company itself is shown.

Capacity requirements are visible at the following levels:

- Resource master plan. (EP)
- Resource order plan (EP)
- Work center utilizations (SFC)

PCS projects

If you work on a PCS project in a multisite environment where sales offices, service departments, and warehouses belong to different financial companies, you can choose where financial transactions for PCS related COGS and revenues must be posted, dependent on the **COGS and Revenues restricted to Financial Company of PCS Project** check box in the Project Control Parameters (tipcs0100m000) session:

- If the **COGS and Revenues restricted to Financial Company of PCS Project** check box is cleared, the PCS related COGS and revenues are posted on the financial companies of the service department, sales office and/or warehouse.
- If the **COGS and Revenues restricted to Financial Company of PCS Project** check box is selected, all PCS related COGS and revenues are posted on the financial company of the PCS project's calculation office. Note that the financial departments of sales orders, service orders, and warehouse orders must be in the same financial company as the PCS calculation office.

If PCS related COGS and revenues are posted on the sales office, service department, or warehouse instead of on the PCS project's calculation office, you must take a few things into account, which are described in the following sections.

COGS distribution

If the **COGS and Revenues restricted to Financial Company of PCS Project** check box in the Project Control Parameters (tipcs0100m000) session is cleared, the general COGS is distributed among several departments instead of only on the PCS project's calculation office. You must use the **COGS Distribution based on** field in the Project Control Parameters (tipcs0100m000) session to choose whether you want to enter the COGS distribution manually, or that LN calculates the COGS distribution based on the revenue of the sales order, service order, and/or warehouse order. Use the Project COGS Distribution (tipcs3110m000) session to view and maintain the COGS distribution.

Note: The general PCS results are always posted on the PCS calculation office, because they are assumed to be always related to the PCS calculation office.

Revenue recognition

If the **COGS and Revenues restricted to Financial Company of PCS Project** check box in the Project Control Parameters (tipcs0100m000) session is cleared, and you calculate interim COGS and revenues for a PCS project, the calculated COGS and revenues are distributed among various departments. The reason is that the PCS project has sales orders, service orders, and warehouse orders are linked to several financial companies. You can view the distributed COGS and revenues by department in the COGS and Revenues by Project and Order (tipcs3192m000) session.

Note: If COGS and revenues for a PCS project are restricted to the financial company of the PCS project, which means that the **COGS and Revenues restricted to Financial Company of PCS Project** check box in the Project Control Parameters (tipcs0100m000) session is selected, the interim COGS and revenues are posted to the PCS calculation office. The 'real' COGS and revenues, however, are posted to sales offices, service departments, and warehouses

Internal invoices

If the **COGS and Revenues restricted to Financial Company of PCS Project** check box in the Project Control Parameters (tipcs0100m000) session is cleared, which means that the financial transactions are posted on the financial company of a sales office, service department, and/or warehouse, you can also send an additional invoice for general COGS from the PCS project to the sales office, service department, or warehouse. You must therefore define an invoice relation between the PCS project and the sales office, service department, or warehouse in the Entity - Entity Relationships (tcemm2110m000) session.

In Sales Invoicing (SLI) and Accounts Payable (ACP), the general COGS on the internal invoice is indicated by a cost item. You must therefore define a default cost item in the Project Control Parameters (tipcs0100m000) session. Furthermore, a PCS project order number is specified on the internal invoice, which is generated based on the number group and series that are defined in the Project Control Parameters (tipcs0100m000) on the **Settings for COGS** tab.

Note: Internal invoices are optional. You can have financial transactions posted to the correct financial company without an internal invoice.

Multicompany Order Management

11

This chapter describes the effects of the LN multicompany functions on the following Order Management processes:

- Sales order management
- Central purchasing
- Performance measurement
- Business partner management
- Pricing

Sales offices and purchase offices

You use the sales offices and purchase offices to define parameters that only apply to the orders that are processed by the sales office or purchase office, instead of all the orders created in the logistic company. You can define multiple sales offices and purchase offices in a single logistic company. Sales office and purchase office parameters include the following:

- Default warehouse
- Default work center, for sales offices
- Series codes for orders, contracts, schedules, etc.

In addition, you can define particular business partner data for each sales office or for each purchase office. LN then registers the open order balance and open invoice balance per sales office or purchase office. For more information, refer to "Business partner management" on page 144 later in this chapter.

Sales offices and purchase offices are linked to enterprise units and, by means of the enterprise unit, to a financial company. In a multifinancial company structure, the transactions that take place in one logistic company are posted to the financial companies of the sales offices, purchase offices, and warehouses.

LN can generate intercompany transactions for the settlements between the financial companies without using invoices. Therefore, in a single-logistic/multifinance structure you can transfer materials, labor and other costs between warehouses linked to different enterprise units, for example, countries or legal entities, without the need for purchase and sales transactions between the sales office in one country and the warehouses or work centers in other countries.

To get these intercompany transactions, you must set up internal trade relationships. You can create the internal trade relations between warehouses and sales offices to specify the price origin, invoicing type, and warehouse surcharge separately for each sales office/warehouse combination. For more information, refer to "Enterprise Modeling Management" on page 51.

Sales order processing

To issue the goods on a sales order, LN does the following:

- Searches the warehouses for sufficient inventory of the required item
- If you use ATP, LN also searches for a work center that can produce and deliver the required item
- Enters, on the sales order line, the warehouse or work center that is found
- Allocates the required quantity to the order
- Ships the goods from the warehouse or work center to the ship-to address

In a multicompany structure, the sales office of the sales order and the warehouses or work centers on a sales order line can be:

- In the same logistic company as the sales office:
  - Linked to the same financial company as the sales office, by means of the enterprise unit
  - Linked to a different financial company than the sales office, by means of the enterprise unit
- In a different logistic company than the sales office. This results in purchase orders and sales orders between the logistic companies.

Inventory check

During sales order entry, you can see the available inventory in the warehouses of the current company and in other logistic companies of the multicompany structure. If sufficient inventory is found, LN enters the warehouse or the work center on the sales order line and allocates the required quantity to the order.

You can use the following two methods to see the inventory:

- Define a bill of enterprise.
- Use the Available to Promise (ATP) functions of Enterprise Planning and the Order Promising (OPS) application of the Supply Chain suite.

Bill of Enterprise

You can define a search sequence of warehouses in the multicompany structure in the Bill of Enterprise (whwmd2130m000) session of Warehouse Management. The bill of enterprise can include warehouses

in the current company and in other logistic companies. You can assign a priority to each warehouse. LN searches the warehouses of the bill of enterprise in the order of their priority for sufficient quantities of the ordered item.

Multicompany ATP

If the ordered item is defined as a plan item in Enterprise planning, or in Order Promising, LN can perform an available-to-promise (ATP) check for the item. You can carry out the ATP checks and the stock allocations in multiple logistic companies of a multicompany structure.

Using Infor Order Promising

If you have implemented Infor Order Promising, LN uses Order Promising to handle sales orders across multiple companies. If you enter a sales order line and the default warehouse does not contain sufficient inventory, Order Promising performs an ATP check and a channel constraint check. If a sufficient quantity is found, Order Promising returns the logistic company and a warehouse that can deliver the goods. LN includes this information in the sales order line.

Note: If no sufficient quantity is found, Order Promising can return a next best date, together with the logistic company and the warehouse, at which the sales order line can be accepted. You can then accept the later date or accept the sales order line for a smaller quantity of the goods.

Technically, Infor Order Promising is integrated with Enterprise Planning. If you enter a sales order line in Order Management, LN passes the ATP check request on to Enterprise Planning and Enterprise Planning starts Order Promising.

Sales order status

The sales order line also includes the sales order status. Order Promising uses the sales order status to determine whether an immediate ATP check is required or the ATP check can be included in a batch ATP-check process. Order Promising also changes the sales order status to indicate the result of the check.

Order delivery and invoicing

The allocated quantity is issued and shipped to the ship-to address. The goods on an order line can be delivered from:

- A warehouse in the same logistic company as the sales office
- Warehouses in a logistic company other than the sales office

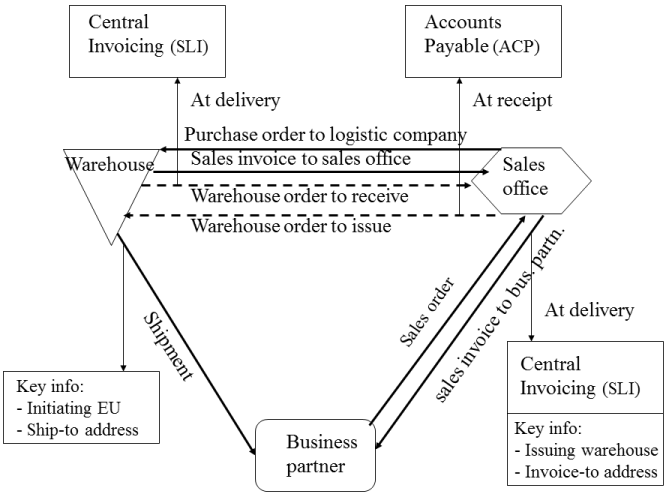
Note: As described later in this chapter, internal EDI requires that all the warehouses on one sales order belong to the same logistic company.

Issue from a warehouse in the same logistic company

If the warehouse belongs to the same logistic company, but is linked to a financial company other than the sales office, you can do the following:

- Define an internal trade relationship between the warehouse and the sales office to generate invoices. For more information, refer to "Internal trade relationships" on page 54.
- Set up Financials to automatically generate intercompany transactions between the financial companies involved.

The following figure shows the orders and documents that are generated based on the internal trade relationship between the warehouse and the sales office:



Issue from warehouses in another logistic company

LN does not support sales orders for goods that must be delivered from warehouses in a logistic company other than the sales office. If the goods on a sales order must be delivered from warehouses in a logistic company other than the sales office, LN generates a purchase order by which the sales office buys the goods from the other logistic company.

You must define the logistic companies as each other's affiliated-company business partners. For more information, refer to "Business Partners" on page 65, for details about affiliated-company business partners.

The purchase order and sales order are exchanged by using Electronic Data Interchange (EDI). EDI bases the addressing on the information in the original sales-order header. As a result, the warehouses on one order must all belong to the same logistic company. For more details about internal EDI, refer to "Multicompany Technical Issues" on page 175.

The goods can be delivered directly from the warehouse to the ship-to business partner. LN can apply invoicing based on direct delivery to generate the financial settlements. For more details, refer to "Multicompany Financials" on page 73.

Note: Order Promising does not support direct deliveries.

Purchase order management

In a multicompany structure, you can manage all or part of the purchase orders centrally. You can, for example:

- Create a central purchase contract with your suppliers, which includes price and discount agreements.
- Receive all purchased goods centrally and distribute the purchase goods over the organization's sites.

Depending on the part of the purchasing that is centralized, several central purchasing scenarios are possible:

- Central contracting/local purchasing
- Central purchasing
- Central purchasing with direct deliveries

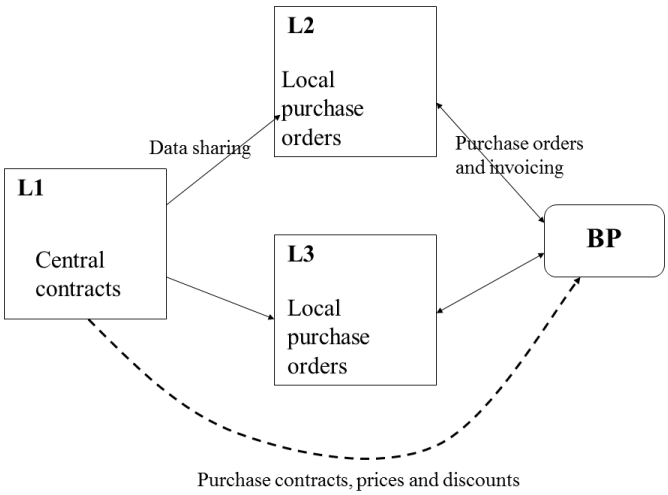
You can use the following sessions to see the purchased quantities and other details for each order:

- Purchase Contracts by Company (tdppur3502m000)
- Purchase Contracts by Purchase Office (tdppur3505m000)

Central contracting/local purchasing

The central purchase office maintains the purchase contracts and purchase pricing. Each separate logistic company (site) purchases goods directly from the outside suppliers, handles the receipts, and pays the invoices. The local purchase orders are based on the conditions, pricing, and discounts negotiated for the contract. The quantities that the individual sites purchase are aggregated to the central contract.

In the following figure, company L1 maintains the central contract. The companies L2 and L3 use the contract data on their purchase orders.



Note: The companies must share the contract tables by means of logical table linking or by replication. For more details, refer to "Multicompany Data Sharing" on page 167

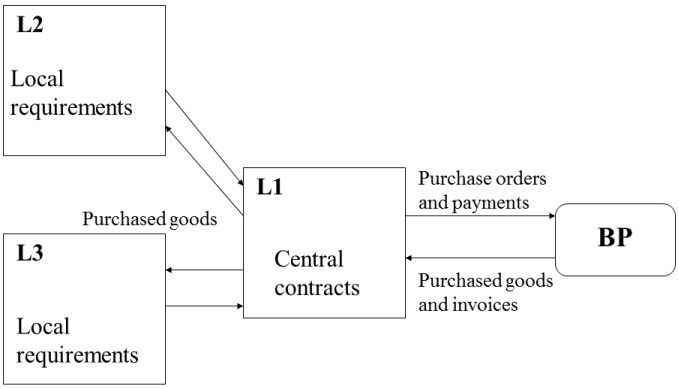
In the company that maintains the central contract, you cannot use delivery schedules to update the planned inventory transactions, because the inventory is present in other companies. You can only use the delivery schedules to display information.

LN records the supplier performance information in the local companies that issue the purchase orders.

Central purchasing

The central purchase office maintains the purchase contracts and purchase pricing and creates all the purchase orders to external suppliers for the organization. Each site passes requirements to the central purchase office. The local sites' requirements of an item are aggregated into larger orders. The central purchase office handles the receipts, pays the invoices, and distributes the goods to the sites.

The sites are separate logistic companies. Therefore, a purchase/sales relationship and invoicing are required to distribute the goods to the sites:



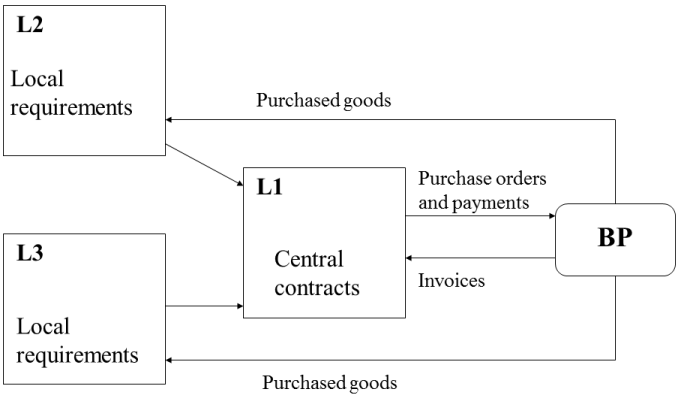
This figure illustrates how you can organize central purchasing.

The companies do not need to share the purchase contract data and the supplier data. The central purchase office's company acts as the supplier to the local companies. Handling each company's requirements and distributing the goods received causes some extra overhead in the central purchase office's company.

Central purchasing with direct deliveries

The central purchase office maintains the purchase contracts and purchase pricing, creates all the purchase orders to external suppliers for the organization, and pays the invoices. Each site passes

requirements to the central purchase office. The central purchase office enters the local sites' warehouses on the orders so that the suppliers ship the goods directly to the sites.



This figure illustrates how you can organize central purchasing with direct deliveries.

The ship-to warehouse is part of the order header. Therefore, the central purchase office must create a separate purchase order for the items ordered for each site. As a result, you cannot aggregate the local sites' requirements into a single order.

LN records the supplier performance information only in the company of the central purchase office.

Purchase requirements collection

To create contracts and pricing conditions, the central purchase office must know the organizations purchase requirements for the medium and long term. Depending on the type of item, you can create contracts and pricing conditions in several ways:

- Use Enterprise Planning to centralize the planned demand or to aggregate the local demand of the various sites. For more information, refer to "Multicompany Enterprise Planning" on page 115.
- Use Exchange to aggregate the planned demand of various logistic companies to the central purchasing company.
- Use Exchange to aggregate the purchase budgets of logistic companies that reside on various servers to the central purchasing company. For details on how to use Exchange, refer to "Multicompany Data Sharing" on page 167.

Vendor rating

LN records the vendor rating data in the company that issues the purchase orders. Vendor rating is always by logistic company. If you use central purchasing, only the company of the central purchase office must have this information.

Business partner management

LN can store the business partner data for each sales office and purchase office. As a result, different sites can have sales and purchase relationships with the same business partners and each use their own business partner data, such as the default currency. For details, refer to "Business Partners" on page 65.

Credit check

The business partner's credit limit is part of the business partner's default data. The invoice-to business partner's credit limit applies to all the sales offices and the invoice-from business partner's credit limit applies to all the purchase offices.

LN records one open order/invoice balance per invoice-to and invoice-from business partner. The open order/invoice balances are updated by means of the sales offices and purchase offices.

If multiple logistic companies use the same business partners, the companies must share the master business partner tables.

To maintain separate order balances and credit limits for each company for the business partners, you can use the same identification codes to define the business partners separately in each company.

During order entry in any of the sales offices or purchase offices, LN calculates the total order balance and checks the balance against the business partner's credit limit.

Pricing

Pricing is restricted to one logistic company. To use the same pricing data in multiple logistic companies, the companies must share the Pricing Control (PCG) tables.

When you create the item purchase data or the item sales data of a new item, LN enters the default price from the Item Sales Data (tdisa001) table or the Item Purchase Data (tdipu001) table in the default price book in PCG. If the entry already exists, LN displays an error message. Therefore, if multiple companies share the PCG tables and each company can create new items, you must ensure that the item codes are unique.

Multicompany Project

12

This chapter describes the most important multicompany features for LN Project.

Financial reporting by project

Projects are key entities of enterprise units. You must link a project to an enterprise unit and this way a link to a financial company is established. The project costs, commitments, revenues, and results are posted to the financial company that is linked to the enterprise unit. In this way one logistic company can contain multiple projects for which you perform separate financial accounting.

You can transfer goods to a project. If the enterprise unit of the warehouse and the enterprise unit of the project are linked to different financial companies, LN creates inter-company transactions between the financial companies.

Purchasing

A purchase office can issue purchase orders for materials, equipment and subcontracting for a project.

In the current release there is a restriction that the enterprise unit of the purchase office on the purchase order and the enterprise unit of the project (project requirement) should belong to the same financial company.

Internal trade relationships

You can transfer materials, labor, and other costs between a project and a warehouse or between warehouses. The warehouses are either of the warehouse type Normal or Project. If the enterprise units of the issuing warehouse and the receiving warehouse are linked to different financial companies, LN creates intercompany transactions between the financial companies.

You can specify the types of pricing and invoicing to be used for internal trade between your warehouses and the project warehouse(s) by defining the internal trade relationships in the EMM module. Refer to "Internal trade relationships" on page 54, for details.

Hours accounting

You can book an employee's hours on a project. If the enterprise unit of the employee's department and the enterprise unit of the project are linked to different financial companies, LN creates inter-company transactions between the financial companies.

Service

You can generate service orders for project requirements. This could be for installation works during the execution or as part of warranty service. If the enterprise unit of the service department and the enterprise unit of the project as linked to different financial companies, then LN creates inter company transactions.

The project currency

You can select a project currency for each project and subproject. The project currency does not have to be one of the company's home currencies. The project's' financial data is based on the project currency. This data includes the actual costs, and the project revenues.

Project monitoring

In the project-monitoring (PPC) Module, the amounts are displayed in the project currency and also in the company's home currencies. In some reports you can select a report currency. When posting the data to Financials, LN converts the amounts from transaction currencies to the financial company's reference currency.

Aggregate the project data

You can aggregate the data from subprojects in the same or different enterprise units to a main project to use it for monitoring a group of projects. In the subprojects the data is based on the subproject's project currency. When you aggregate the data to the main project, LN converts the amounts to the main project's currency.

Multicompany limitations of LN Project

In a multicompany structure, the following limitations apply to LN Project:

- You cannot distribute a project across multiple logistic companies.
- LN Project does not support the multilogistic/multifinancial company structure.

Multicompany Service

13

This chapter describes the important multicompany features supported in Service. The general assumption is that transactions are not shared, so Service transactions, such as service orders and service calls, are excluded from sharing.

To a limited extent, Service can function in a multilogistic company scenario. Some Service related information can be shared and this chapter outlines the features and the possibilities.

External material delivery is possible for transfer of materials across enterprise units. In addition, you can also work in a multilogistic Service environment to a limited extent. The most notable options include the following:

- Central Service resources
- Central Service reference activities
- A shared Service installed base

The major restriction is that the logistic companies cannot share the Service departments that you define in the Service Departments (tsmdm1100m000) session. As a result, any information with a mandatory reference to service departments cannot be shared.

Service can operate in a multifinancial company structure to a good extent using enterprise units. This enables setting up of external material delivery relationships and intercompany account processing. For details, refer to "Invoicing between service departments and warehouses" on page 106.

Because of installation and maintenance at the customer's site, and direct delivery of items and spare parts between the supplier and the customer's site, your company can require tax registration in foreign countries in which your organization is not yet represented by a financial company. For details, refer to "Tax registration in a foreign country" on page 97.

Central Service resources

All master data related to Service can be defined and used centrally. This means that details such as service types, coverage types, tasks, measurements, service items, and service bill of material can be shared. Another advantage is that the same terminology is used everywhere in the service organization.

However, the service department details and other related information like service areas, zone classes and employees preferably must not be shared.

The benefit of defining central service resources lies in minimizing the amount of information to be defined. In addition, the information about products and their generic breakdown structures is available in all the companies.

Central Service reference activities

One of the major prerequisites for sharing reference activities is a common reference currency. Otherwise, the cost overview of the activities can give erratic results. Sharing reference activities also means other details such as resource requirements for these activities and inspection templates are defined and used centrally.

The benefits of common reference activities are reduced definition time and standardization of service activities across companies.

Shared Service installed base

Installed base consisting of clusters, lines, the physical breakdown structure and the details of serialized items become visible across multilogistic companies if the installed base is shared.

When business partners are shared in a multilogistic environment, it becomes increasingly necessary to share their installed bases in order to service customers better. So this feature renders visibility into the installed base and makes it easier to enter installed base information from multiple sources.

The responsible service departments for the installed base can become visible and can indicate the presence of these departments in other logistic companies. If Service customers seek services from the company as a whole it becomes possible to provide services independently.

For example, you need to use a shared installed base if you perform maintenance and repairs on ships that sail to all countries around the world. The ship can be serviced by the service engineers that are nearest. The service engineers have the as-built information available and, after the repairs, the as-repaired information can be updated centrally.

Table sharing

For information about table sharing for Service, refer to the *User's Guide for Multicompany Table Sharing (U9505* US)*.

Enterprise units

In a multifinancial company structure, to perform separate financial accounting for the service departments and their warehouses, you can assign the service departments to different Enterprise units. You can set up LN to generate the corresponding inter-company transactions between the financial companies to which the enterprise units are linked.

Inter-company or inter-group transactions are useful while settling the accounts between companies due to goods or services transactions. For example, this is required if service engineers from various countries have worked together on a job.

External material delivery

If materials are transferred between service departments and warehouses, LN can perform invoicing based on external material delivery between the service departments and warehouses. In the Enterprise Modeling Manager (EMM) module, you can define an internal trade relationship with associated invoicing between the service departments and the warehouses. This kind of trade is related to service orders and maintenance sales orders.

Business process

For an issue on a service order or a maintenance sales order, Warehouse Management checks whether an invoicing relation exists between the service department and the warehouse. If that is the case, and you confirm the shipment, Warehouse Management releases the invoicing information to Invoicing, which in turn creates the invoice between the warehouse and the service department. For returned items, LN generates a credit note. This functionality is similar to external material delivery between a warehouse and a sales office.

The invoices between a warehouse and a service department require these integration document types:

- Service / Issue (Invoiced)
- Service / Receipt (Invoiced)
- Maintenance Sales / Issue (Invoiced)
- Maintenance Sales / Receipt (Invoiced)

The inventory value is not considered in the service WIP. The difference between inventory value and commercial transfer price can be made visible by mapping the difference to a separate Revenue Analysis ledger account.

Internal subcontracting for depot repair

If operations or activities are carried out by one legal entity on behalf of another legal entity, LN can create an internal invoice based on kind of trade Internal Subcontracting for Depot Repair.

Example: a work order to repair an item, linked to a maintenance sales order originating from another service department.

Multicompany Warehouse Management

14

Most of the multicompany-warehousing features are related to other packages and, therefore, are discussed in previous chapters in this document. This chapter provides a summary of the multicompany features of LN Warehouse Management, which are the following:

- Separate financial accounting
- Internal trade relationships
- Default warehouse by sales/purchase office
- Internal material delivery
- External material delivery
- Inventory check in multiple logistic companies

Financial accounting per country

Each warehouse is a key entity of an enterprise unit and, in this way, you link each warehouse to a financial company. As a result, LN can perform separate financial accounting for the warehouses of one logistic company. For example, these can be warehouses in different countries. For more information, refer to "Multicompany Structures" on page 25.

Internal trade across country borders

Using separate financial accounting for the warehouses, you can perform internal trade within one logistic company across country borders. You do not need to redefine the transferred items and you do not need to generate purchase orders and sales orders.

If the internal trade must be invoiced, you must define internal business partners and link the warehouses' enterprise units to them. You can define an internal trade relationship between the warehouses to specify the type of invoicing. For more information, refer to "Business Partners" on page 65.

Internal trade relationships

In one logistic company, you can define internal trade relationships such as:

- From a warehouse to another warehouse
- From a purchase office, service department, accounting office, or shipping office to a warehouse
- From a warehouse to a sales office, service department, or accounting office

You can use the internal trade relationship to specify:

- Price origin
- Any surcharges
- Type of invoicing
- Currency to be used

Internal trade between different logistic companies must be controlled by sales orders and purchase orders. You must link the companies to affiliated-company business partners. For more information, refer to "Business Partners" on page 65.

Supply network in Enterprise Planning

You can use LN Planning to model a supply chain that includes production plants, distribution centers, and so on. The distribution centers consist of clusters of warehouses. You must define the clusters in the Enterprise Modeling Management (EMM) module. The warehouses of one cluster must belong to one logistic company, but you can define the supplying relationships between clusters of various logistic companies to form a supply network of warehouses. In this case, you must map the item definitions of one logistic company on the item definitions of the other logistic company.

For more information, refer to "Multicompany Enterprise Planning" on page 115.

Default warehouse by sales/purchase office

You can select a default warehouse for sales offices and for purchase offices. For example, the sales office’s default warehouse is the default warehouse for all the sales orders that are created for the sales office. If the office and the warehouse are linked to different financial companies, LN can automatically carry out intercompany settlements. For more information, refer to "Multicompany Financials" on page 73.

External material delivery

If sold goods are shipped from a warehouse directly to the ship-to business partner and the warehouse sends an invoice to the sales office or service department that created the warehouse order, LN can apply invoicing based on kind of trade External Material Delivery. For more information, refer to "Internal invoicing" on page 105.

Multicompany inventory check

During sales order entry, you can see the available inventory in the warehouses of the current company and in other logistic companies of the multicompany structure.

If sufficient inventory is found, LN enters the warehouse or the work center on the sales order line and allocates the required quantity to the order.

For more information, refer to "Inventory check" on page 138.

Multicompany warehouse transfer

If, in the Entity – Entity Relationships (tcemm2110m000) session, an entity-entity relationship was defined for internal trade from a warehouse to a warehouse in another logistic company, you can process these transfers by using a transfer order. A transfer order is a warehousing order with inventory transaction type **Transfer**.

In general, a transfer order is simpler to process than a combination of a sales order in the first company and a purchase order in the other company. However, some specific functionality that is available for purchase orders, such as pricing, is not available for transfer orders.

If, in the Entity – Entity Relationships (tcemm2110m000) session, you set the **Type of Order to be Generated by Enterprise Planning** to **Warehouse Transfer**, and you plan a transfer between the relevant warehouses in Enterprise Planning, LN handles this goods transfer by generating transfer orders.

Alternatively, you can choose to have Enterprise Planning create purchase orders that you send to the other company.

Multicompany Freight Management

15

In a multisite environment, you can enhance freight management and planning by centralizing this discipline and creating an overall picture of its requirements.

LN offers the possibility to centrally manage and process freight orders, order clusters, shipments and loads across multiple sites. In this way you get a clear insight in transport-related requirements, real optimization in the handling of freight orders, consolidation and planning of loads and shipments, reduction of costs, proper subcontracting of transport to carriers, and so on.

Two basic characteristics of multicompany freight management are:

- Freight Management is enabled for multisite warehouse transfers, which are goods flows that take place between warehouses belonging to different logistic LN (system) companies.
- Centralizing Freight Management is possible under any circumstance. Whether freight order control and planning for different logistic sites takes place in a central office does not necessarily depend on whether transport takes place between entities within one logistic LN company or several.

LN Freight Management contains various tables for master data such as shipping offices, planning groups, carriers, transport means groups, routes, rates, and so on. To create an overall/central transport plan for a group of logistical sites/entities, most of these tables must be shared.

For details, refer to "Basic organization-related data" on page 161 and "Basic execution-related data" on page 162 later in this chapter.

The need for centralized insight and maintenance also applies to operational data such as freight orders. This is not achieved through table sharing. For details, refer to "Operational data" on page 163 later in this chapter.

Business cases/scenarios

LN Freight Management is enabled for use in various multisite scenarios, for example:

- Completely Centralized Management and Planning of Transportation
- Central and Local Freight Management Combined
- Central + Local Freight Management & Transport to ‘External’ Company

Refer to the following sections for details on these scenarios.

Fully centralized management and planning of transportation

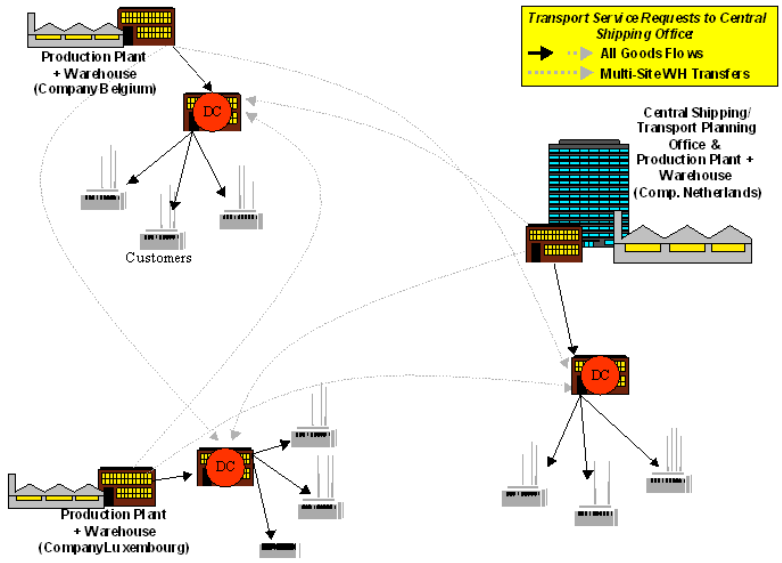
A producer/shipper manages three production sites with warehouses in three different countries (Netherlands, Belgium and Luxembourg). To streamline the distribution of his end products, three distribution centers (warehouses) are used. These DCs are also located in the Netherlands, Belgium and Luxembourg.

This production company centrally organizes and manages the transport of its end products between all warehouses, DC's and customers, which can be linked to separate logistic sites. For each country, a separate logistical company was defined in LN.

Transport requirements originating from different logistic sites are managed centrally in the Netherlands office, to obtain a clear overall insight in all transport requirements, to optimize load consolidation, to properly instruct carriers and to reduce costs. (Alternatively, you can define a separate company for central freight management, but this has no real impact on this scenario.)

In practice, this means that transport orders, planning, lead time calculation, costing, and so on for the entire Benelux region are handled in the Netherlands and that feedback about progress, results, and so on must be available or reported to the offices or sites handling the original customer and warehouse orders.

The following picture shows the goods flows, including multisite warehouse transfers, which are the transport service requests to be handled by the central shipping office:



The three logistic system companies are:

1. Netherlands: production and warehouse, DC, Central Shipping Office
2. Belgium: production and warehouse, DC
3. Luxembourg: production and warehouse, DC

Every country has its own DC from where customers are preferably supplied, in other words, the Dutch DC generally supplies customers in the Netherlands, the Belgian DC supplies customers in Belgium,

and so on. However, this can be deviated from, for example, if a customer must be supplied straight from a production warehouse.

All production sites are more or less specialized and end products are issued to all existing DCs, from where they are distributed.

The central shipping office in the Netherlands checks for all orders whether consolidation across the Benelux countries is feasible. For example, a shipment from the DC in Belgium to a customer in Belgium can be combined with a shipment from the production warehouse in Belgium to the DC in the Netherlands, a shipment from the production warehouse in the Netherlands to the Netherlands DC and a shipment from the Netherlands DC to a Dutch customer.

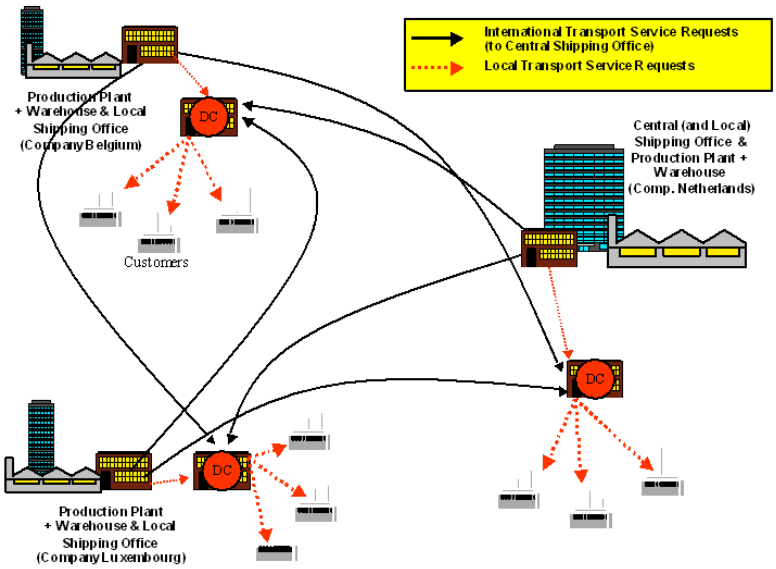
Central and local freight management combined

This scenario is similar to the previous one, except for some aspects.

Three logistical companies are connected to each other in a multisite scenario. However, due to the complexity of local transport and distribution, many local customers, local regulations, contacts with local carriers, language issues, it was decided to leave the planning and execution of local shipments from the production warehouse in Belgium to the DC in Belgium to the customers in Belgium, in the hands of the local DC.

This implies that the central shipping office only handles international transport. However, local transport in the Netherlands is also managed here, but apart from international orders.

This situation is explained in the following picture:



The three logistic system companies are:

1. Netherlands: production and warehouse, DC, Central & Local Shipping Office
2. Belgium: production and warehouse, DC, Local Shipping Office

3 Luxembourg: production and warehouse, DC, Local Shipping Office

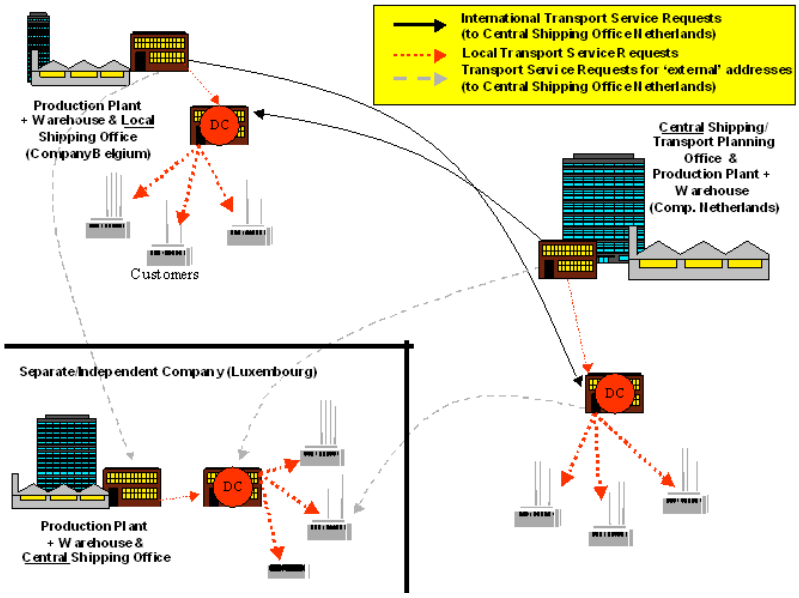
In practice, this means that optimization of freight planning is limited, because local and international transport requirements are separated and managed independently. In other words, consolidation of international shipments with local shipments does not take place.

Comments

- This scenario requires more flexible rules for attaching shipping offices. Currently the shipping office is determined by the warehouse the goods are shipped from, which is too rigid. Some kind of matrix is necessary here (similar to ‘Planning Groups’).
- This scenario could be managed by defining ‘Planning Groups’ (for example, ‘Belgium Local’, Luxembourg Local, and so on) as a subdivision of the central Shipping Office. These ‘Planning Groups’ are attached to a freight order via a user-defined ‘Planning Matrix’. However, if it is essential that the managing, planning and costing of ‘local’ freight orders take place in the related logistic and/or financial company rather than centrally, multiple shipping offices are required.

Central and local freight management and transport to ‘external’ company

This scenario looks as follows:



This scenario does not add much to the previous two scenarios with regard to the issue of multisite Freight Management!

If goods need to be shipped to a warehouse, DC, or customer belonging to a company outside the multisite structure (or vice versa), this means that such warehouses, DCs and customers will mostly be known as ship-to business partners / delivery addresses within the multisite setup. In that respect there is no difference with scenario 2.

Replenishing a warehouse or DC belonging to an ‘external’ company is best treated as a purchase – sales relationship, because Warehouse Transfers cannot be used for moving goods to ‘unknown’ warehouses in separate multisite setups (’external’ companies). In other words, the ‘external’ company – or perhaps the warehouse or DC itself – must be defined as a customer, and the supplying company as a supplier in the other multisite structure.

If a delivery is made straight to a customer linked to an ‘external’ company, in which the originating sales order is recorded, this equals a standard ‘direct delivery’ scenario, where the ‘external’ company is the customer and the customer of the ‘external’ company functions as the delivery address.

If the above situation is not an exception but recurs frequently, for example, for specific customers, you might reconsider the multisite setup. Another option would be to record such customers in both multisite setups, because they are actually customers to both. This implies that the customer knows from which supplier to order what type of goods.

Basic and operational data

Basic organization-related data

Shipping offices

The shipping office is the instrument for determining where, and in which logistic company, freight orders are managed and planned. You can freely define one or more central shipping offices that have insight in transport requirements (freight orders) across logistic sites and which can (centrally) consolidate / pool all these orders based on the usual FM criteria, irrespective of the originating company.

Besides these central shipping offices local offices can exist, which handle their own transportation issues. The shipping office table must be shared, to make them available in all system companies.

Shipping offices are attached to freight orders through a matrix.

The following entities play a role in the matrix for selecting the correct shipping office, and are available as criteria:

- Company (of originating order)
- Route
- Country from / Country to
- Area from / Area to
- Ship-from Address / Ship-to Address
- Warehouse (responsible for planning)
- Enterprise Unit (responsible for planning)
- Department (responsible for planning)

- Order Origin
- Carrier
- Point of Title Passage
- Terms of Delivery

Note: Whether a warehouse, department or enterprise unit is ‘Responsible for Planning’ is determined in the Entity – Entity Relationships (tcemm2110m000) session.

The Warehouses by Shipping Office’ (fmfmd0185m000) session functions as fallback scenario if no ‘shipping office matrix’ has been defined.

A user (the transport planner) can change the shipping office on a freight order. In practice, this means that the freight order is sent to a different shipping office to be processed and that the freight order record disappears from the user’s view. For that reason, the system l displays a message stating that the order will disappear and ask the user for acknowledgement.

Planning Groups

Planning groups function as a subdivision of shipping offices. If load planning is required, a shipping office must have at least one planning group. Planning groups can function across logistic companies, because a central shipping office can consist of several planning groups, for example, one for bulk transport and one for hazardous material.

A scenario in which there is local and central freight management both occur can also be handled by means of Planning Groups as a subdivision of a central Shipping Office (‘Belgium Local’, ‘Luxembourg Local’, ‘Netherlands Local’ and ‘Central’ in example scenario 2.).

On the other hand, if multiple shipping offices are preferred (for reasons mentioned earlier in this chapter), some planning groups will belong to local shipping offices and others to central offices.

The Planning Groups table can be shared, but this is not mandatory.

Basic execution-related data

Most basic transport execution-related Freight Management or Common data such as transport means groups, carriers, means of transport, standard routes, route plans, classes, plan matrixes, transport types, service levels, combination codes, must be available centrally. In many cases, this is achieved through table sharing.

Common data and rate scales

Addresses

Addresses play a crucial role in any transportation scenario, as all destinations are addresses and all load- and unload activities take place at an address. Therefore it is necessary to work with a 'central address database' containing all addresses known within the multisite structure, even though in most scenarios only part of the addresses will be used across companies or centrally. This goes for the Common table tccom130 as well as the Freight Management table 'Addresses – Freight Management' (fmfmd0110m000).

Distances

To avoid discrepancies between distance calculations carried out in different shipping offices, which will impact calculations with regard to lead times, costs and revenues, but which can also influence the route selection, it is required to share all tables concerning distances, even though many distances will only be used locally.

Rates

With regard to the freight rates it is advisable to use table sharing, because the rates are mostly uniform and must be transparent both to customers and internally. A situation where all local and central shipping offices define and use their own rates can lead to unclear situations and discrepancies. Furthermore, operationally independent local shipping offices need not necessarily be independent in the area of price agreements and rate agreements with carriers or customers. Central freight rate control or at least supervision will often be required.

Another reason is that in LN, freight rates can be consulted at a very early stage, namely already on sales order line level, which means no shipping office – related information is known yet or any freight details for that matter. Nevertheless, a rate must be found to communicate to the customer.

Operational data

Multisite warehouse transfers

It is possible to include multisite warehouse transfer orders in the freight management and planning operations. First of all this means that the system can generate freight orders for manual' warehouse transfers as well as warehouse transfers triggered by distribution orders within Enterprise Planning.

The most extensive version of a multisite warehouse transfer, with regard to the above examples, is a scenario in which goods are shipped from the production warehouse in Belgium to the DC in Luxembourg, while freight is managed by the central shipping office in the Netherlands.

The warehouse transfer order exists in the companies of both Belgium and Luxembourg, while the outbound shipment is executed in Belgium and the inbound shipment in Luxembourg. The freight order must be known in all three companies. The actual planning and execution is done in the Dutch shipping office, but the start and finish of the load take place at the warehouse in Belgium and the DC in Luxembourg. This entire procedure, including all progress indication statuses, must be synchronized across the three companies!

Freight Orders

Freight orders are the basis of all Freight Management procedures, because they indicate the exact transport requirements. Freight orders indicate what is shipped and how, at what times and where goods must be loaded or unloaded, and so on. Consequently, to cater for an overall transport planning for a group of logistical sites/entities, central / cross-company access to freight orders must be possible.

Because this is not done through table sharing, the freight orders are generated, managed, planned and processed in the company to which the shipping office of the order belongs.

Simultaneously a link or ‘peg’ is generated in the originating (local) company, to retain the connection between the freight order and the originating order. This peg must also pass on any changes from the originating orders to the related freight orders.

In any case, it is essential to realize that the shipping office linked to a freight order determines where freight management and planning will take place. This can be the local shipping office, related to the company where the transport requirement originated, or a central shipping office, in which case ‘central’ insight in the freight orders must be possible.

A very important aspect is that information regarding the status and progress of freight orders, which is stored in the company of the central shipping office responsible, must be available to the logistic companies involved (that means, the companies from which the freight orders originate. Easy access to this centrally stored progress data, such as order- and planning statuses, must be possible, for example, to allow local sales offices to answer questions from customers regarding the progress or whereabouts of their orders and goods!

Load plans, loads and shipments

Transport planning data such as load plans, loads and shipments, result from running the Freight Management load planning engine. In principle, this planning information is generated only in the company of the shipping office responsible for processing the freight orders, which may be a local or a central shipping office.

However, if a central shipping office is involved that deals with transport orders originating from other companies, planning/progress information must be available to these companies. To retrieve this information, the system will use the ‘pegs’ mentioned above to switch/refer straight to the company containing this data, which is the company to which the central shipping office belongs.

Under any circumstance, planning data like load plans, loads and shipments must only be maintainable in the company of the shipping office in control, which is the shipping office attached to the freight orders, loads and shipments, regardless of whether this is a local or central shipping office.

Obviously, the same goes for freight order clusters made for subcontracting purposes.

Direct deliveries

Freight Management can handle "direct deliveries", which are goods movements straight from the supplier to the customer, that do not originate from or arrive at a warehouse recorded in the system. It is possible to include these transports in multisite scenarios for central management and planning, together with all other freight orders.

Planning Board

Orders displayed and managed in the planning board can originate from different logistic system companies.

Calendars

We recommend that you share these types of calendars:

Calendars linked to addresses
These are the most frequently used calendars within Freight Management. They indicate when loading and unloading activities are allowed at customer sites, warehouses, and so on.

You should centralize these calendars for the following reasons:

- They are linked to address management data, which is usually centralized.
- They are often based on agreements/contracts with customers, which are often created centrally.

Calendars linked to means of transport
Although situations can occur in which local shipping offices have a dedicated (local) transport fleet, it usually is more efficient to manage the entire transport fleet on a central level, enabling transport planners to get the most out of their vehicles. Consequently, the calendars attached to means of transport must be accessible and maintainable centrally.

Multicompany Data Sharing

16

The companies of a multicompany structure must share some data and can optionally share other data. This chapter describes a number of data sharing techniques and their requirements, possibilities, and drawbacks.

Sharing data

In a multicompany structure, some database tables:

- Must be shared: For example, Companies (tccom000) table that contains the company numbers and the information about each company's home currencies must be shared in all types of multicompany structures. In a multilogistic/single-financial company structure, the General Ledger tables must be shared, among others.
- Cannot be shared: Data that is specific to one company cannot be shared. For example, the information about departments, warehouses, and projects that is company specific must not be shared.
- Can be shared: Your organization's business requirements can demand that the companies share data, such as the general item data, business partners, and pricing and contract data. This can be for practical reasons, such as resources, security, and data consistency. Sharing data is preferable to manually updating the data in a number of companies. For example, if a production plant and a distribution center handle the same items, they can share (part of) the general item data.

Shared data can be of two types:

- Relatively static, such as master data, which includes currencies, business partners, and tax codes
- Dynamic, for example, transaction data, such as sales order balances, or master data that frequently changes, such as currency exchange rates

Data sharing methods

Depending on the type of data, the requirements, the number of database servers in the multicompany structure, and the technical and networking possibilities, you can use the following methods to share data between companies:

- Logical table linking: Companies that share data by means of logical table linking use the same physical tables. One instance of every record exists. The companies must use the same database server. For more information, refer to "Logical table linking" on page 171.

Example

Companies 100, 101, and 102 have the currency table linked. The physical table resides in company 100, but users that access the currency table from any of the three companies cannot tell where the table resides.

Currencies are added, modified, or deleted in the table physically that resides in company 100 and the change is immediately visible for all the users in all three companies. The currency tables in companies 101 and 102 remain empty.

- Data replication: Companies that use different database servers can share data by means of data replication. Every company has a unique copy of the data. Therefore, multiple instances of one record exist. You must determine which company has the right to change the data, in other words, which company owns the data. For more information, refer to "Data replication" on page 172.

Example

Companies 100 and 200 both have the same business partners. Therefore, using the same business partner codes in both companies is convenient. However, the terms of payment for this type of data differs in both companies.

Company 100 is the central company in which the business partners are created and modified. Every night the business partner table is copied (replicated) from company 100 to company 200, and, during the replication process the company 200 specific data, are changed (converted) automatically.

Every organization has unique data management requirements and server configurations. Therefore, the decisions about the best data sharing method to use and which data must be shared are unique for each multicompany structure. See also the description of network types and server configurations in "Multicompany Technical Issues" on page 175.

Sharing referenced data

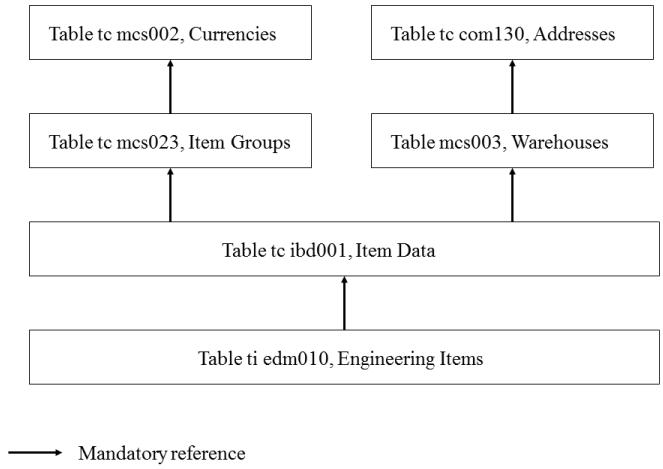
Many tables contain references to data in other tables. If companies share data, the tables must usually also share the referenced data. This depends on whether the referenced data is mandatory or optional. These rules apply:

- If the referenced data is mandatory data, companies that share tables must also share the tables that contain referenced data.
- If the referenced data is optional data, the referenced data can be shared but can also be company specific. If the referenced data is optional data, the following applies:
  - If the company uses the referenced data, the referenced data must exist.

- If the company does not use the referenced data, the referenced data does not need to exist in that company.

Many levels of reference can exist, and the references can be far-reaching and complex. You must investigate the table references in detail for each implementation.

The following figure shows an example of table references:



This figure includes the following table references:

- The Engineering Items (tiedm010) table references the Item Data table, for the item group and the item type.
- The Item Data (tcibd001) table has mandatory references to the Item Groups (tcmcs023) table and to the Warehouses (tcmcs003) table.
- The Item Groups table has a mandatory reference to the Currencies (tcmcs002) table.
- The Warehouses table has a mandatory reference to the Addresses (tccom130) table.

Table Sharing Modeler

To make sure that all required reference tables are shared, you must define a table sharing configuration through the LN Tools Table Sharing Modeler sessions: you must first specify the tables you want to share, subsequently the Table Sharing Modeler adds all relevant reference tables.

For more information, refer to the *User's Guide for Multicompany Table Sharing (U9505* US)*.

Data integrity

Data integrity is the accuracy of the data and its conformity to the data's expected value, particularly after the data was transmitted or processed. If the companies share database tables, three aspects are important for the data integrity:

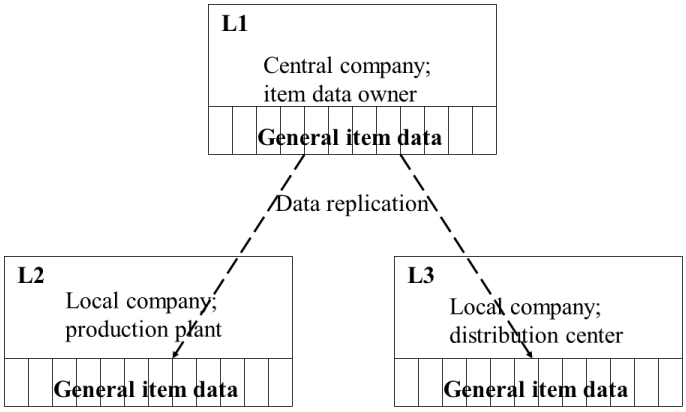
- Data ownership
- Integrity of referenced data
- Transaction data integrity

Data ownership

Data ownership is the right to change the data.

If the companies share data by means of logical table linking, only one instance of the data exists. Any company can modify the data, and all companies work with the current version of the data. Multiple companies can own the data.

If the data is replicated, you must determine which company owns the data, as shown below:



The companies in this figure use replication to share the general item data. The central company owns the general item data. Each time when the data is replicated from the central company to the local site companies, any changes that the local site companies made to the general item data are lost. This applies to all types of changes:

- Modified records
- Created records
- Deleted records

Integrity of referenced data

The mandatory data that is referenced by other data must exist. For example, you cannot remove a currency that is still in use by an item group. For this reason, whenever you want to delete a record, LN checks whether the record is still in use anywhere.

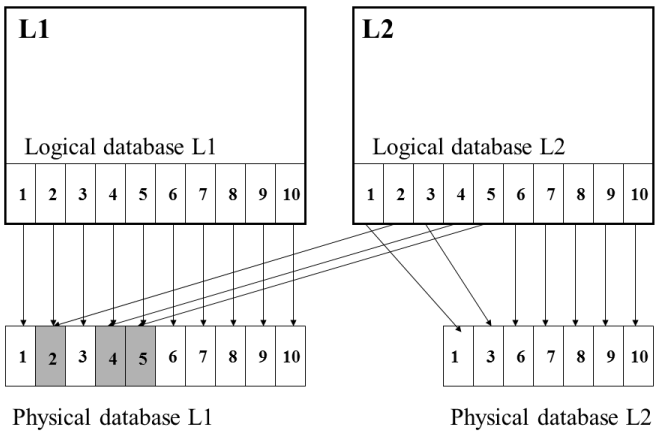
If you use data replication to share the data between the companies and various companies own the data tables that contain references to each other, you must take care that the data's referential integrity is preserved.

Transaction-data integrity

Most transactions involve modifications of multiple tables. For example, when you confirm a sales order, LN allocates the required inventory, generates the financial transactions, and updates the business partner's open order balance. To ensure the data integrity between these tables, the transaction must either be fully completed or not carried out at all. This can only be guaranteed if the tables that are involved in one transaction all reside on the same database server.

Logical table linking

Companies that use the same database server can share data by means of logically linked tables. Logical table linking means that the database tables are created for one company and used by a number of companies, as shown in the diagram.



In the diagram, the companies share tables 2, 4, and 5. In company L2 tables 2, 4, and 5 are logically linked to the tables of company L1.

To logical table linking, these rules apply:

- The companies that share data by means of logical table linking must all use the same database server.
- The companies' data models must be exactly the same.
- Logical table linking is always per table. The companies cannot share part of a table and keep company specific information in a part of the table that is not shared.
- If tables are linked, referenced tables that contain mandatory data must also be linked.

If you use logical table linking, you must consider the following:

- If a table contains transaction data, the table can become very large when several companies add records to the table.
- Before deleting a record, LN checks all the references in all the companies that have access to the table. This can take a great deal of time.
- Queries on a large table can take a great deal of time.
- If a user modifies a record, the record is locked. The chance that users try to access a locked record increases with the number of users of the table.

When you create a new company you can specify which tables must be logically linked to another company's tables, through the Table Sharing Modeler sessions of LN Tools. For more information, refer to "Table Sharing Modeler" in the LN Web Help.

Caution: You must not logically link these types of tables:

- Tables that contain a key entity.

  A key entity is an entity that is defined in the Enterprise Modeling Management (EMM) module. Each key entity contains a reference to an enterprise unit, which only exists in its company. Therefore, you must not logically link these tables.

- Tables that contain dynamic data and that do not refer to a company number.

  This data is only relevant to the company to which the data belongs. Dynamic implies that the data constantly changes, which is constantly updated. This data is only used in one company and you can usually trace the data back to one company.

Data replication

If you use data replication to share data between the companies, the data is copied (replicated) to each company's database. Multiple instances of the same records exist.

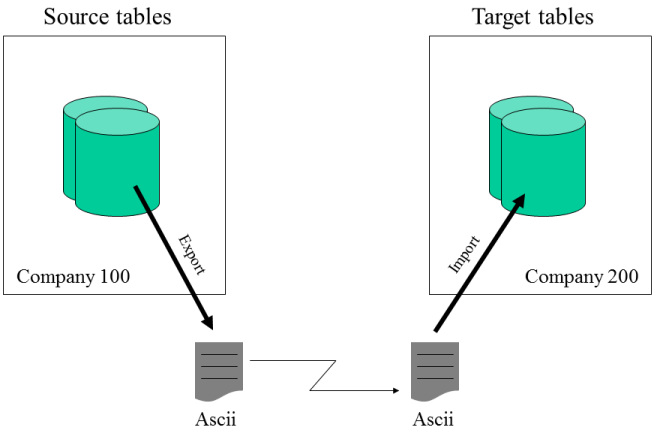
You must replicate the data between the companies on a regular basis. Depending on the type of data this can be, for example, once a week for tax rates, daily for item data, or hourly for financial transaction data.

Note: If you want to replicate a table, you must usually also replicate the corresponding reference tables. Refer to "Sharing referenced data" on page 168 for details. Use the Table Sharing Modeler sessions to investigate the table references in detail.

You can use LN Exchange for data replication.

LN Exchange

Exchange is the LN package for data replication. Exchange exports the data to ASCII files and imports the data on other servers. You must set up exchange schemes on every server to import data from other servers and/or export data to other servers, as shown in the diagram.



Exchange offers two types of data replication:

Audit-based exchange
Only the changed data is replicated to the other database.

Full exchange
All the specified data is replicated to the other database.

You can carry out both types of data replication manually or as a batch job that runs according to a predefined schedule or according to a calendar.

For more information, refer to *Infor LN Exchange User's Guide (U8405* US)* and to the LN Online Help for the Data Director (da) package.

Multicompany Technical Issues

17

This chapter globally describes some technical issues that are relevant if you have a multicompany structure, for example:

- Network types
- Server configurations
- Electronic Data Interchange (EDI)

Network types

You must use a network to exchange data between the workstations and the LN servers. The type of network that you use also determines the data sharing possibilities. The following basic network types exist:

- Local Area Network (LAN)

  A network of data lines within one physical location. The data transfer speed is usually very good. You can use a LAN for all table sharing and data replication methods.

- Wide Area Network (WAN)

  A network between remote sites. A WAN usually consists of rented cables that run over long distances. The capacity and the length of the cable restrict the volume and speed of the data transfer. A WAN is generally more sensitive to breakdowns, for example, by physical damage. Therefore, you can only use a WAN for the following:

  - User interface connections with remote LN workstations
  - Less-frequent data replication, if no other solution is available

Server configurations

Depending on the size of your system, and the performance requirements, you can use a single server or a cluster of multiple servers. The application servers and database servers must be connected by

means of a LAN. The workstations can be connected to their application servers by means of a LAN or a WAN. The following server configurations are the most important:

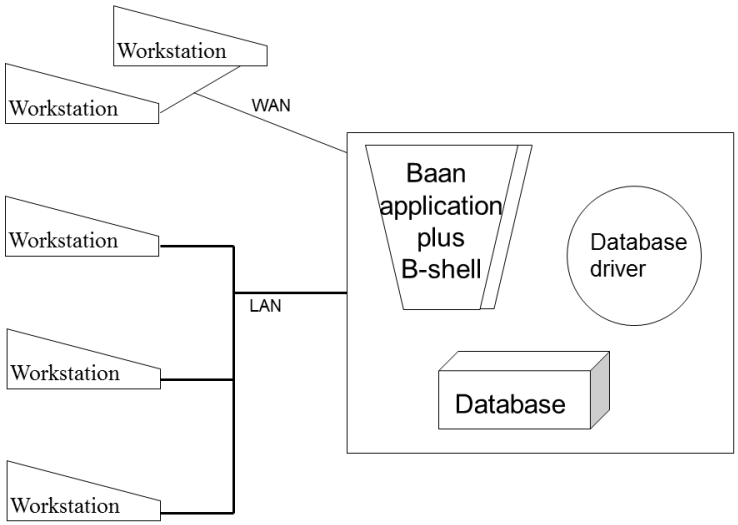
- Single server
- Dedicated database server
- Application server cluster with a single database server
- Server cluster with multiple database servers

For implementation details and information about other available types of configurations, refer to the LN technical documentation.

Single server

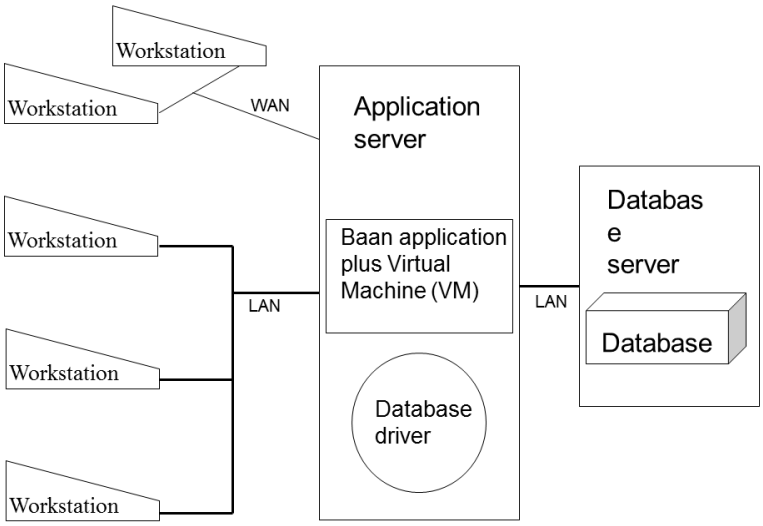
The simplest server configuration for an LN system consists of one server that is used as both the application server and the database server. You can connect the workstations to the application server by means of a LAN or a WAN. The Virtual Machine (VM) component of the application server controls the presentation of the LN application on the workstation (the user interface).

The following figure illustrates a single-server configuration:



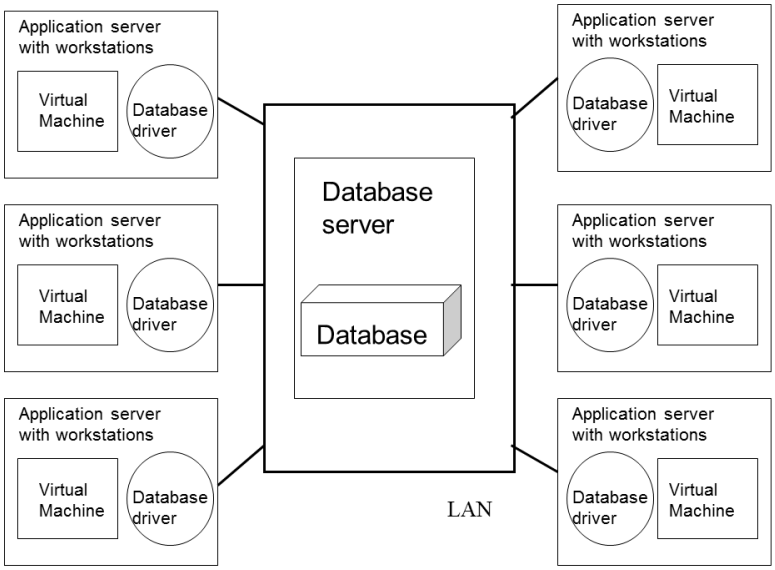
Dedicated database server

To increase performance, you can add a server that you use as a dedicated database server. The database server must be connected to the application server via a LAN. The following figure illustrates a server cluster with a dedicated database server:



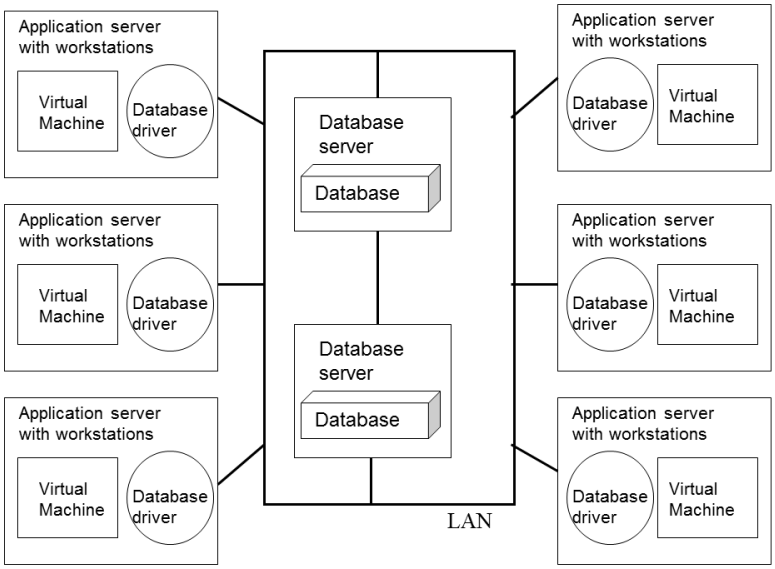
Application server cluster with a single database server

In a multicompany structure, you might be required to use multiple application servers. Ideally, all the application servers of this type of server cluster use one database server. The companies of the multicompany structure can share data by logical table linking. The following figure shows a server cluster that uses one database server:



Server cluster with multiple database servers

If you need to use multiple database servers, the companies can share data by a combination of logical table linking and data replication. Note that all the data involved in one LN transaction must reside on one database server. The following figure shows a server cluster that includes multiple database servers:



Single point of failure

The single point of failure is the component of the cluster in which a failure stops the entire cluster from operating. Importantly, you must realize which cluster is the single point of failure of a server cluster and monitor that part closely.

For example, if an application server is not operational in the server cluster in the following figure, another application server can take over for the server and work can continue. However, if the database server is not available, or in the event of a network failure, you cannot perform any transactions. For example, this type of cluster has the following single points of failure:

- The network
- The database server computer

To avoid problems, you must monitor the single points of failure and have an immediate stand-by solution ready. For example, you can apply high-availability techniques to a database, such as mirroring the database on a second database server

Electronic Data Interchange (EDI)

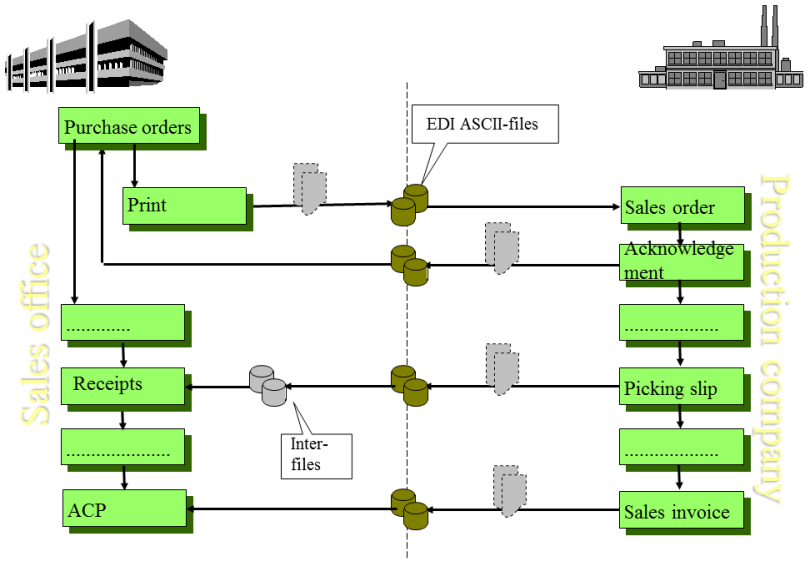
EDI is a means to exchange information with your business partners by electronic mail. The information includes sales and purchase orders, shipment notices, invoices, and all other types of information necessary to carry out business transactions. You must define the appropriate business partner roles. For example, you can only send purchase-order EDI messages to a business partner with the buy-from role.

External EDI

EDI generates and reads ASCII files with a flexible format. Between external business partners, the data is typically transferred over commercial or noncommercial networks. The translation of the EDI files is handled by third-party translation and communication software that can also encrypt data that is transferred over unsecured networks.

Multicompany (internal) EDI

In a multicompany structure, you use EDI to process standard messages between logistic companies that are each other's affiliated-company business partners, as shown in the following figure:



You do not need to encrypt the files, because the ASCII files are usually transferred over an internal company network (LAN or WAN). In addition, you do not need to translate the files to an external EDI standard because all the companies of the multicompany structure use the same format for the ASCII files.

EDI is a module of the LN Electronic Commerce (EC) package. For details on how to set up multicompany EDI, refer to the *ERP Enterprise EDI User Manual (U7100* UA)*.

Glossary